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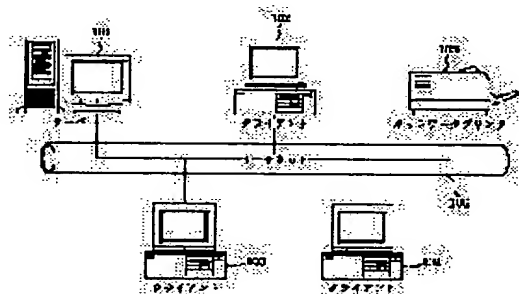
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(54) PRINTING INTERRUPTION METHOD, INFORMATION-PROCESSING APPARATUS, OUTPUT CONTROL APPARATUS, PRINTING INTERRUPTION SYSTEM, AND MEMORY MEDIUM WHICH STORES PRINTING INTERRUPTION PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To continue printing normally even when a user starts next printing by providing a control means for controlling a transmission means to transmit a printing interruption requirement when the printing interruption requirement is received during the transmission of print data by the transmission means transmitting data to an external apparatus.

SOLUTION: Client PCs 102-104 and a server 101 are connected to a network 106, and a network printer 105 prints based on printing data transmitted from the client PCs 102-104. At this time, when a printing process start command is sent from a user, the present printing data transmission program is started thereby connecting the network printer 105 and client PCs 102-104. Then it is checked whether a printing interruption requirement is sent from the user. Without the requirement, printing data are transmitted to the printer 105. On the other hand, in the case of YES, a printing interruption command and a connection-cutting command are transmitted to the printer 105, whereby the process is terminated.



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## CLAIMS

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[Claim(s)]

[Claim 1] The information processor characterized by having a transmitting means to transmit data to an airline printer, and the control means controlled to transmit a printing suspend request with said transmitting means, and to transmit a printing suspend request to a carrier beam case with said transmitting means while transmitting print data.

[Claim 2] Said information processor is an information processor according to claim 1 characterized by transmitting print data to said airline printer after it connects with the server which is performing printing sequence management of the job of the print data of said information processor and said server gives transmitting authorization of print data to said information processor.

[Claim 3] A receiving means to receive data from an external device, and an analysis means to analyze the data received by said receiving means, A storage means to store the data received by said receiving means, and an elimination means to eliminate the data stored in said storage means, It is the power control device characterized by having the control means controlled to eliminate the data stored in said storage means with said elimination means when a printing suspend request is analyzed in the data received by said analysis means.

[Claim 4] Furthermore, the power control device according to claim 3 characterized by having an expansion means to develop the data stored in said storage means to an image data, and the output means which carries out the printout of the image data developed by said expansion means.

[Claim 5] In the print system by which the printer was connected with the computer said computer With a transmitting means to transmit data to an external device, and said transmitting means, while transmitting print data It has the control means which controls a printing suspend request to transmit a printing suspend request to a carrier beam case with said transmitting means. Said printer A receiving means to receive data from an external device, and an analysis means to analyze the data received by said receiving means, A storage means to store the data received by said receiving means, and an elimination means to eliminate the data stored in said storage means, It is the print system characterized by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means when a printing suspend request exists in the data analyzed by said analysis means.

[Claim 6] It is the print system according to claim 5 characterized by said computer transmitting print data to said printer after the server which is performing printing sequence management of the job of the print data of said computer is further connected to said print system and said server gives transmitting authorization of print data to said computer.

[Claim 7] Said print system is a print system according to claim 5 characterized by minding the network.

[Claim 8] While transmitting data to said airline printer, a printing suspend request at the transmitting process which makes data transmit to an airline printer from an information processor, and said transmitting process to a carrier beam case The control process made to control to transmit a printing suspend request in said transmitting process, The receiving process which makes said airline printer receive data from said information processor, The

analysis process which makes the data received at said receiving process analyze, and the storage process which makes the data received at said receiving process store in a storage means, When a printing suspend request exists in the elimination process which makes the data stored in said storage means eliminate, and the data with which said airline printer was analyzed at said analysis process The printing interruption approach characterized by including the elimination control process made to control to eliminate the data stored in said storage means in said elimination process.

[Claim 9] Furthermore, the printing interruption approach according to claim 8 characterized by having the sequence management process of making the printing sequence of the job of the data of said information processor managing, and the authorization process which makes transmitting authorization of data given to said information processor.

[Claim 10] The transmitting process which makes data transmit to an airline printer from an information processor, and while transmitting data to said airline printer from said information processor, a printing suspend request to a carrier beam case The control process controlled to make a printing suspend request transmit to said airline printer in said transmitting process, The receiving process which makes said airline printer receive data from said information processor, The analysis process which makes the data received at said receiving process analyze, and the storage process which makes the data received at said receiving process store in a storage means, When a printing suspend request exists in the data analyzed at the elimination process which makes the data stored in said storage means eliminate, and said analysis process The storage the program which can be read was remembered to be by computer characterized by including the elimination control process controlled to make the data stored in said storage means eliminate at said elimination process.

[Claim 11] Furthermore, the storage according to claim 10 characterized by including the sequence management process of making the printing sequence of the job of the data of said information processor managing, and the authorization process which makes transmitting authorization of data given to said information processor.

[Claim 12] The information processor characterized by having a transmitting means to transmit data to an external device, and the control means which transmits the size information on the print data transmitted to an external device with said transmitting means with print data, and controls a printing suspend request to stop transmission of print data to a carrier beam case while transmitting print data to an external device.

[Claim 13] Said information processor is an information processor according to claim 12 characterized by transmitting print data to said airline printer after it connects with the server which is performing printing sequence management of the job of the print data of said information processor and said server gives transmitting authorization of print data to said information processor.

[Claim 14] A storage means to store the print data received by print data, receiving means to receive size information, and said receiving means from an external device, A count means to calculate the size of the print data received by said receiving means, A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means, When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes The power control device characterized by having the control means controlled to eliminate the data stored in said storage means with said elimination means when the size and said size information on said print data compared with said comparison means differ from each other.

[Claim 15] Furthermore, the power control device according to claim 14 characterized by including the expansion process which makes an image data develop the data stored in said storage means, and the output process to which the printout of the image data developed at said expansion process is carried out.

[Claim 16] In the print system by which the printer was connected with the computer said computer The size information on the print data transmitted to said external device with a transmitting means to transmit data to an external device, and said transmitting means is transmitted with print data. While transmitting print data to an external device, it has the control



means which controls a printing suspend request to stop transmission of print data to a carrier beam case. Said printer A storage means to store the print data received by print data, receiving means to receive size information, and said receiving means from an external device, A count means to calculate the size of the print data received by said receiving means, A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means, When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes The print system characterized by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means when the size and said size information on said print data compared with said comparison means differ from each other.

[Claim 17] It is the print system according to claim 16 characterized by said computer transmitting print data to said printer after the server which is performing printing sequence management of the job of the print data of said information processor is further connected to said print system and said server gives transmitting authorization of print data to said computer.

[Claim 18] Said print system is a print system according to claim 16 characterized by minding the network.

[Claim 19] The size information on the print data transmitted to said airline printer at the transmitting process which makes data transmit to an airline printer, and said transmitting process is transmitted with print data. The control process which controls a printing suspend request to stop transmission of print data to a carrier beam case while transmitting print data to an airline printer, The receiving process which makes said airline printer receive print data and size information from an information processor, The storage process which makes the print data received at said receiving process store in a storage means, The count process which makes the size of the print data received at said receiving process calculate, The comparison process which makes the size of said print data calculated at said count process compare with said size information received at said receiving process, When reception of the print data in the elimination process which eliminates the data stored in said storage means, and said receiving process finishes The printing interruption approach characterized by including the elimination control process made to control to eliminate the data stored in said storage means by said elimination SUTTEPU when the size and said size information on said print data compared at said comparison process differ from each other.

[Claim 20] Furthermore, the printing interruption approach according to claim 19 characterized by including the sequence management process of making the printing sequence of the job of the data of said information processor managing, and the authorization process which makes transmitting authorization of data given to said information processor.

[Claim 21] The size information on the print data transmitted to an airline printer at the transmitting process which makes data transmit to an airline printer, and said transmitting process is transmitted with print data. The control process which makes a printing suspend request control to stop transmission of print data to a carrier beam case while transmitting print data to an airline printer, The receiving process which makes said print data and said size information receive from an information processor, The storage process which makes the print data received at said receiving process store in a storage means, The count process which makes the size of the print data received at said receiving process calculate, The comparison process which makes the size of said print data calculated at said count process compare with said size information received by said receiving SUTTEPU, When reception of the print data in the elimination process which makes the data stored in said storage means eliminate, and said receiving process finishes When the size and said size information on said print data compared at said comparison process differ from each other The storage the program which can be read is remembered to be by computer characterized by having the elimination control process made to control to eliminate the data stored in said storage means at said elimination process.

[Claim 22] Furthermore, the storage according to claim 21 characterized by including the sequence management process of making the printing sequence of the job of the data of said information processor managing, and the authorization process which makes transmitting

authorization of data given to said information processor.

[Claim 23] The information processor carry out having a maintenance means make a file the print data changed into printer language, and hold them, a transmitting means transmit the print data currently held at said maintenance means to an external device, and the control means that control in a printing suspend request by said transmitting means to continue transmitting print data to the end-of-page condition under transmission to a carrier beam case while transmitting print data to an external device as the description.

[Claim 24] It is the information processor according to claim 23 which has further a detection means to detect the code with which termination of a page is expressed out of the print data changed into printer language, and is characterized by controlling said control means by continuing transmitting until it detects the code with which termination of a page is expressed with said detection means.

[Claim 25] Said information processor is an information processor according to claim 23 characterized by transmitting print data to said airline printer after it connects with the server which is performing printing sequence management of the job of the print data of said information processor and said server gives transmitting authorization of print data to said information processor.

[Claim 26] In the print system by which the printer was connected with the computer said computer With a maintenance means to make a file the print data changed into printer language, and to hold them, a transmitting means to transmit print data to an external device, and said transmitting means While transmitting print data to an external device, a printing suspend request to a carrier beam case It has the control means controlled to interrupt transmission since it continues transmitting print data to the end-of-page condition under transmission. Said printer A receiving means to receive the print data transmitted from an external device, and an expansion means to develop the print data received by said receiving means to an image data, When reception of the print data from an output means to output the image data developed by said expansion means, and said receiving means finishes The print system characterized by having an output-control means to control to develop the print data received with said receiving means with said expansion means, and to output with said output means.

[Claim 27] It is the print system according to claim 26 which said computer has further a detection means to detect the code with which termination of a page is expressed out of the print data changed into printer language, and is characterized by controlling said control means by continuing transmitting until it detects the code with which termination of a page is expressed with said detection means.

[Claim 28] It is the print system according to claim 26 characterized by said computer transmitting print data to said printer after the server which is performing printing sequence management of the job of the print data of said information processor is connected further and, as for said print system, said server gives transmitting authorization of print data to said computer.

[Claim 29] Said print system is a print system according to claim 26 characterized by minding the network.

[Claim 30] The maintenance process which makes a file the print data changed into printer language to a computer, and is made to hold for a maintenance means, While transmitting print data to an external device, a printing suspend request at the transmitting process which makes print data transmit to an external device, and said transmitting process to a carrier beam case The control process made to control to interrupt transmission since it continues transmitting print data to the end-of-page condition under transmission, The receiving process which makes the print data transmitted from an external device receive to a printer, When reception of print data finishes with the expansion process which makes an image data develop the print data received at said receiving process, the output process to which the image data developed at said expansion process is made to output, and said receiving process The printing interruption approach characterized by including the output-control process made to control to develop the data received at said receiving process at said expansion process, and to output at said output process.

[Claim 31] It is the printing interruption approach according to claim 30 characterized by to make it control by interrupting transmission since it continues transmitting until it detects the code as which said control process expresses termination of a page in said detection process including the detection process which makes the code with which termination of a page is expressed out of the print data further changed into printer language detect to a computer.

[Claim 32] Furthermore, the printing interruption approach according to claim 30 characterized by including the sequence management process of managing the printing sequence of the job of the data of said information processor, and the authorization process which makes transmitting authorization of data given to said information processor.

[Claim 33] The maintenance process which makes a file the print data changed into printer language to a computer, and is made to hold for a maintenance means, While transmitting print data to an external device, a printing suspend request at the transmitting process which makes print data transmit to an external device, and said transmitting process to a carrier beam case The control process made to control to interrupt transmission since it continues transmitting print data to the end-of-page condition under transmission, The receiving process which makes the print data transmitted from an external device receive to a printer, When reception of print data finishes with the expansion process which makes an image data develop the print data received at said receiving process, the output process to which the image data developed at said expansion process is made to output, and said receiving process The storage with which the program which is characterized by including the output-control process made to control to develop the data received at said receiving process at said expansion process, and to output at said output process, and in which computer reading is possible was stored.

[Claim 34] It is the storage according to claim 33 characterized by to make it control by interrupting transmission since it continues transmitting until it detects the code as which said control process expresses termination of a page in said detection process including the detection process which makes the code with which termination of a page is expressed out of the print data further changed into printer language detect to a computer.

[Claim 35] Furthermore, the storage according to claim 33 characterized by including the sequence management process of managing the printing sequence of the job of the data of said information processor, and the authorization process which makes transmitting authorization of data given to said information processor.

[Claim 36] A receiving means to receive print data from an external device, and a storage means to store the print data received with said receiving means, An elimination means to eliminate the print data stored in said storage means, A derivation means to derive the hour entry which has passed after said receiving means finally received print data, When the time amount based on the hour entry drawn by said derivation means exceeds predetermined time while transmission of print data was not completed from an external device The power control device characterized by having the control means controlled to delete the print data stored in said storage means by said elimination means.

[Claim 37] Furthermore, the power control device according to claim 36 which \*\*\*\*\* having an expansion means to develop the print data stored in said storage means to an expansion field to an image data, and the output means which carries out the printout of the image data developed by said expansion field with said expansion means.

[Claim 38] Said elimination means is a power control device according to claim 36 characterized by transmitting the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means.

[Claim 39] Said control means is a power control device according to claim 36 characterized by controlling to cut a connection with an external device further when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Claim 40] The receiving process which makes print data receive from an external device, and the storing process which makes the print data received at said receiving process store in a storage means, The elimination process which makes the print data stored in said storage means eliminate, The derivation process which makes the hour entry which has passed after receiving

print data finally at said receiving process draw, When the time amount based on the hour entry drawn at said derivation process becomes larger than predetermined time while transmission of print data was not completed from an external device The printing interruption approach characterized by including the control process made to control to delete the print data stored in said storage means at said elimination process.

[Claim 41] Said elimination process is a power control device according to claim 40 characterized by making the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means transmit.

[Claim 42] Said control process is the printing interruption approach according to claim 40 characterized by making it control to cut a connection with an external device further when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Claim 43] The receiving process which makes print data receive from an external device, and the storing process which makes the print data received at said receiving process store in a storage means, The elimination process which makes the print data stored in said storage means eliminate, The derivation process which makes the hour entry which has passed after receiving print data finally at said receiving process draw, When the time amount based on the hour entry drawn at said derivation process becomes larger than predetermined time while transmission of print data was not completed from an external device The storage with which the program which is characterized by including the control process made to control to delete the print data stored in said storage means at said elimination process, and in which computer reading is possible was stored.

[Claim 44] Said elimination process is a storage according to claim 43 characterized by making the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means transmit.

[Claim 45] Said control process is a storage according to claim 43 characterized by making it control to cut a connection with an external device further when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] In case this invention prints by transmitting print data through a network from a computer to the printer which uses Page Description Languages, such as logical inference per second, it relates to the storage which memorized the method of interrupting transmission to the midst by which print data are transmitted to the printer from the computer, and interrupting printing processing to it, the equipment, system, and program to realize.

[0002]

[Description of the Prior Art] Conventionally, after OS's (operating system), such as Windows (trademark) which operates on a computer, change into printer language peculiar to a printer the print data which application created, they are transmitted to a printer. When a suspend request is during transmission of print data from a user, OS is stopped when there is a suspend request from a user about transmission of the print data to a printer. However, even if a computer stops transmission of print data, the print data transmitted to the middle will be received by the receive buffer in a printer. Furthermore, since it was interrupted, the print data which the printer received next will be processed as remaining print data of the print data sent only to the middle of a page. Therefore, when another print data were newly transmitted to a printer, in the printer which uses a Page Description Language, the print data sent newly were connected with the print data sent to the last middle, garbled characters etc. occurred, and normal printing was not able to be continued.

[0003]

[Problem(s) to be Solved by the Invention] Also when a suspend request is during data transmission in this way, the object of this invention is to offer the printing interruption approach and equipment which make it possible to continue printing normally, even if a user performs the next printing.

[0004] Moreover, when the connection of an airline printer and an external device is cut for a certain reason during data transmission and data transmission is not made normally, even if a user performs the next printing, it is in offering the printing interruption approach and equipment which make it possible to continue printing normally.

[0005] Moreover, when long duration transmission of the data is not carried out at an airline printer, it is in offering the printing interruption approach and equipment which make it possible to continue processing of the data and the next printing normally.

[0006]

[Means for Solving the Problem] In the print system by which the printer was connected with the computer in order to attain the above-mentioned object said computer With a transmitting means to transmit data to an external device, and said transmitting means, while transmitting print data It has the control means which controls a printing suspend request to transmit a printing suspend request to a carrier beam case with said transmitting means. Said printer A receiving means to receive data from an external device, and an analysis means to analyze the data received by said receiving means, A storage means to store the data received by said receiving means, and an elimination means to eliminate the data stored in said storage means,

When a printing suspend request exists in the data analyzed by said analysis means, it solves by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means.

[0007] In the print system by which the printer was connected with the computer furthermore, said computer The size information on the print data transmitted to said external device with a transmitting means to transmit data to an external device, and said transmitting means is transmitted with print data. While transmitting print data to an external device, it has the control means which controls a printing suspend request to stop transmission of print data to a carrier beam case. Said printer A storage means to store the print data received by print data, receiving means to receive size information, and said receiving means from an external device, A count means to calculate the size of the print data received by said receiving means, A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means, When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes When the size and said size information on said print data compared with said comparison means differ from each other, it solves by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means.

[0008] In the print system by which the printer was connected with the computer furthermore, said computer With a maintenance means to make a file the print data changed into printer language, and to hold them, a transmitting means to transmit print data to an external device, and said transmitting means While transmitting print data to an external device, a printing suspend request to a carrier beam case It has the control means controlled to interrupt transmission since it continues transmitting print data to the end-of-page condition under transmission. Said printer A receiving means to receive the print data transmitted from an external device, and an expansion means to develop the print data received by said receiving means to an image data, When reception of the print data from an output means to output the image data developed by said expansion means, and said receiving means finishes The print data received with said receiving means are developed with said expansion means, and it solves by having an output-control means to control to output with said output means.

[0009] Furthermore, a receiving means to receive print data from an external device in a power control device, A storage means to store the print data received with said receiving means, An elimination means to eliminate the print data stored in said storage means, A derivation means to derive the hour entry which has passed after said receiving means finally received print data, When the hour entry drawn by said derivation means becomes larger than the value defined beforehand while transmission of print data was not completed from an external device It is solvable by having the control means controlled to delete the print data stored in said storage means by said elimination means.

[0010] (Operation) By using the above-mentioned means, the print data which the network printer could know the transmitting termination of print data with the command, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0011] With other means, the print data which the network printer could know the transmitting termination of print data by cutting of a connection, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0012] After transmitting print data to a printer to a end-of-page condition, transmission of print data can be interrupted for other means. Consequently, a printer can continue printing processing normally, even if another new print data are transmitted, after transmission of the print data from a computer is stopped.

[0013] With other means, when data are not transmitted from a fixed time amount external device during data reception, a time-out can cut a connection compulsorily. Consequently, even

if another new print data are transmitted from a computer, printing processing can be continued normally.

[0014]

[Embodiment of the Invention] First, the virtual print server system which will be the requisite for this invention is explained.

[0015] Drawing 1 is system configuration drawing of the network system which applies a virtual server.

[0016] In drawing 1, the client computer (client PC) assumes that n sets connect. 102, 103, and 104 are client computers, a network cable connects with a network 106, and can perform various kinds of programs, such as an application program, and carry the printer driver which has the function to change print data into the printer language corresponding to a printer. In addition, a printer driver shall support two or more printer language. 101 is a server, and a network cable connects network 106, the file used in a network is accumulated or it supervises a how [ to carry out a network 106 ] condition. The server 101 of this example is equipped with the function which stores further the job information on printing data that the printing demand was advanced from the client 102, 103, and PCs 104, or notifies the information on the job received to IP information and the buffer of a network printer 105 to Client PC. It is a network printer, and it connects with the network 106 through the network interface, and 105 changes at a time into a dot image 1 page of printing data transmitted from Client PC, and prints them for every page. 106 is a network and has connected with Client PC, a server, a network printer, etc.

[0017] Thus, deployment of Client PC and processing which mitigates a network burden are performed by sharing a role with a server 101, a client 102, 103, and PCs 104, and a network printer 105.

[0018] Drawing 2 is the block diagram showing the outline configuration of a client PC 102. In addition, a client 103 and PCs 104 is the same configuration.

[0019] CPU200 performs the application program stored in HD (hard disk)205, a printer driver program, OS, etc., and performs control which stores required information, a file, etc. temporarily to RAM202 at program execution.

[0020] In ROM201, various data, such as programs, such as a basic I/O program, font data used in the case of a document processing system, and data for templates, are memorized. 202 is RAM and functions as the main memory of CPU200, a work area, etc.

[0021] 203 is FD (floppy disk) drive and can load a network printer control program including this print-data transmitting program memorized by FD204 through the FD drive 203 as shown in drawing 5 etc. to this computer system. 204 is FD, stores the printer driver program etc. and can be stored in storage means, such as HD205.

[0022] The configuration of the content memorized by FD203 is shown in drawing 4. In drawing 4, 400 is the content of data of FD204, 401 is volume information which shows the information on data, and a network printer control program is program-code-ized based on the follow chart of a network printer control program including the print-data transmitting program 402 is shown in directory information and 403 is indicated to be to drawing 11, and 13 and 15. 404 is the associated data.

[0023] 205 is HD and stores the application program, the network printer control program, OS, etc. 206 is a keyboard and a user does the input directions of the instruction of the control command of a device etc. to a client computer. 207 is a display and displays the command inputted from the keyboard 206, the condition of a printer, etc. 208 is a system bus and manages the data flow in Client PC.

[0024] Drawing 3 expresses the memory map in the condition that the network printer control program including this print-data transmitting program was loaded to RAM202, and activation of it was attained.

[0025] 301 is a basic I/O program, and when the power source of this control unit is turned on, it is a field in which the close program which has the IPL (initial program low TINGU) function for OS to be read into RAM202 from HD205, and to make actuation of OS start etc. is. 302 is OS, associated data is developed by a network printer control program and 304 303, respectively, and the work area where CPU200 performs a network printer control program is taken 305.



[0026] Drawing 6 is the block diagram showing the outline configuration of the network printer 105 in this example. At this example, as a network printer, although the laser beam printer (LBP) is used, it is not restricted to this and it cannot be overemphasized that the printer of other methods may be used.

[0027] 601 is CPU and controls the whole equipment. 602 is ROM/RAM and contains the buffer which stores temporarily the control program which controls CPU601, a constant data, and a transmitted and received data. The printing interruption program ( drawing 12 , 14) of this invention is also stored here.

[0028] 605 memorizes the control program and data which are the storage section, for example, are performed by the data transmitted and received and CPU501 like a hard disk. 603 is a display and displays a content, an actuation situation, etc. of the data stored temporarily at ROM / RAM602, and the data memorized by the storage section 605.

[0029] 604 is the printer printing section and carries out the printout of the bit map data generated by CPU601 based on the program memorized by ROM/RAM602. 606 is a network board and communicates data information, such as an external device and printing data, such as a client computer (client PC) and a server, and job information, through this communications department. Furthermore, the network board 606 has RAM, CPU, and ROM which carried out the graphic display abbreviation, and has intelligence nature. The printing interruption program of this invention shall be memorized by ROM of this network board 606.

[0030] Although this example showed the example in which the printing interruption program of this invention is stored in the network board, it cannot be overemphasized that it may not restrict to this, this printing interruption approach can be realized even if stored in ROM602 in a network printer 105, and you may mount in a network printer 105 through external memory means, such as FD and CD-ROM.

[0031] 607 is a communication line and connects a network board 606 and a network.

[0032] Moreover, although the graphic display abbreviation was carried out, in the network printer 105, it shall also have the control unit (control panel) which is a directions input means for a user to do direct directions.

[0033] Drawing 7 is drawing showing the client PC in the system of this invention, and the software configuration of module of a server.

[0034] As for a network printer and 702, 701 is [ the software configuration of module of Client PC and 703 ] the software configurations of module of a server. 704 is an application module which takes out printing directions to a network printing system, and, for the printer monitor for virtual printers, and 709, as for a virtual print manager and 711, the control monitor for network printers and 710 are [ the printer driver by which 705 is included in GDI of Windows and 706 is incorporated in Windows, and 707 / the printer spooler in Windows, and 708 / the virtual print server API (Application interface) and 712 ] virtual printer server services. [0035] The virtual print manager 710, the virtual print server API 711, and the virtual print server service 712 exist in both Client PC and a server. Henceforth, a virtual print server, a call, and this system are called a virtual print server system for what doubled the virtual print server service (client) which constitutes the virtual print server service 712, and virtual print server service (server).

[0036] The actuation which prints from a client PC 102 to a network printer 105 in said configuration is explained. In this example, it explains taking the case of Windows. The flow of the printing processing which carries out a printing demand from Client PC to a server is expressed to drawing 8 , and the flow of the printing processing which gives printable authorization from a server to Client PC, and is transmitted to a printer is expressed with drawing 9 . Here, the already explained block diagram is made to continue explanation using the same sign. The flow of printing processing is explained using this drawing 8 R> 8 and drawing 9 .

[0037] On a client PC 702 (102), application 704 starts printing through GDI705. GDI notifies initiation of printing to the Windows spooler 707 and the print monitor 708 for virtual print servers. The print monitor 708 for virtual print servers which received initiation of printing requests initiation from the virtual print server service (server) 712 on a server 703 (101) for preservation of print data from this via the virtual print server service (client) 712. It is required that GDI705 should change print data into printer language at a printer driver 706. The print data



changed into printer language are spooled to the Windows spooler 707. On the other hand, the print monitor 708 for virtual print servers receives the print data spooled to the Windows spooler 707 from the Windows spooler 707, and passes the print data to the virtual print server service (client) 712. The virtual print server service (client) 712 saves the received print data at the temporary file in the virtual print spooler 801 in HD205 of drawing 2 which carried out the graphic display abbreviation temporarily. When all print data are saved at the temporary file in the virtual print spooler 801 in HD205, the virtual print server service (client) 712 notifies preservation termination of print data to the virtual print server service (server) 712 on a server 703 (101), and requests printing. Here, virtual print server service is using the same module by Client PC and the server, and can use it properly with the object for clients, and the object for servers by setting out.

[0038] In drawing 9, it is drawing having shown actuation until the print job previously registered into virtual print server service becomes the sequence which prints through management of a server and transmits print data to a network printer actually. The virtual print server service (server) 712 issues the directions which can be printed to the client PC which became the sequence of printing. The virtual print server service (client) 712 which received the directions reads the print data temporarily saved by the above-mentioned at the virtual print spooler 801, and passes them to the control monitor 709 for network printers. The control monitor 709 for network printers lets a printing communications protocol pass, and prints print data with delivery and a network printer 701 to a network printer 701.

[0039] The actuation which notifies the status of a network printer 701 to Client PC is explained. Here, it explains taking the case of Windows. Printer status flow is shown in drawing 10.

[0040] The virtual print server service (server) 712 requests collection of the status of a network printer 701 from the SNMP manager 1002 at intervals of 5 seconds (default) in this example. The SNMP manager 1002 requests a status collection demand from a network printer 701. A network printer 701 returns the current printer status. The virtual print server service (server) 712 performs the change notice of the status to KURAIAN PC which is using this network printer 701, when the status of a network printer 701 changes. The virtual print server service 712 in Client PC (client) receives the change notice of the printer status taken out from the server, and it saves the printer status at the registry 1001 in RAM in Client PC. Application 704 can acquire the printer status saved via the virtual printer server API 711 at registry 1001.

[0041] Thus, a virtual print server system processes printing.

[0042] It is the case where WindowsNT (trademark) is used, and in this, a print monitor 708, a virtual print spooler, the virtual print server service (client/server) 712, and the network printer control monitor 709 are newly made from this invention, and this example is a standard module for WindowsNT except it. However, it can build by other OS's, such as OS/2 instead of what is restricted to this.

[0043] The [1st example] In the 1st example, processing of the client computer which is a transmitting side shows the example which copes with printing interruption processing.

[0044] Drawing 11 is a flow chart showing control of the computer of the print-data transmitting program which operates on a client computer (following computer). This print-data transmitting program is a part of network printer control program of this invention, and is stored in ROM201, RAM202, or HD205.

[0045] First, if directions of printing processing initiation are received from a user, this print-data transmitting program will start and it will progress to step S1101. The connection of a network printer and a client computer is established at step S1101. At step S1102, it judges whether there was any printing suspend request from a user. If there is a printing suspend request, it will progress to step S1105, and if there is no printing suspend request, it will progress step S1103.

[0046] At step S1103, print data are transmitted to a network printer. At step S1104, it judges whether all print data were transmitted. If it transmitted altogether, processing will be advanced to step S1106. If it has not transmitted to the end of print data, it will return to step S1102. In S1106, delivery and a connection are cut for a connection's cutting command to a network printer, and processing is ended.

[0047] At step S1105, this print-data transmitting program transmits a printing interruption

command for directions of the purport of the printing interruption from a user to a network printer by that of a carrier beam, and processing is advanced to step S1106.

[0048] Drawing 12 is a flow chart showing control of the network printer in the printing interruption program which operates on a network printer. This printing interruption program is stored in the storage which carried out the graphic display abbreviation in the network board 606 as mentioned above.

[0049] At step S1201, it judges whether the connection with a client computer established the printing interruption program. Step S1201 is repeated until a connection is established. If it is judged that a connection is established, processing will progress to step S1202. At step S1202, it judges whether the connection with a client computer was cut. CPU on a network board judges this decision by transmitting a connection cutting command to a network printer from a computer. If printing is started and a connection cutting command is not transmitted when a connection is cut, it progresses to step S1203. Although printing initiation was judged by transmission of a connection cutting command here, transmitting termination of a job may be judged by judging whether the job quit command of a print job was received from the client computer besides this.

[0050] At step S1203, print data are received from a client computer. At step S1204, the print data which the network printer received judge whether it is a printing interruption command. This decision is judged when CPU of a network board 606 analyzes print data. Into the print data which the network board 606 analyzed, if it is not a printing interruption command, processing will be returned to step S1202. If the printing interruption command is included in print data, it will progress to step S1205.

[0051] At step S1205, the network board 606 which judged the printing interruption command clears the buffer holding the received data in a network board, and the print data in a network printer, and ends processing. The clearance of this buffer deletes all the data in a buffer so that the data sent to a degree can be printed normally. The print data (print data) in a network printer are made to control so that a network printer deletes print data when a network board transmits a Delete command to a network printer.

[0052] Thus, in the 1st example, since the network board connected to the network printer by transmitting a printing interruption command to a network printer can judge interruption of printing and clears the buffer of both in a network board and a network printer when a computer receives a printing interruption command to a network printer while transmitting print data, a useless output can be cleft and the printing data sent to a degree do not need to be influenced of garbled characters etc., either.

[0053] The [2nd example] In the 2nd example, processing of the network board 606 which is a receiving side shows the example which copes with interruption processing.

[0054] Drawing 13 is a flow chart showing control of the computer of the print-data transmitting program which operates on a client computer. This print-data transmitting program is a part of network printer control program of this invention, and is stored in ROM201, RAM202, or HD205.

[0055] This program is controlled by step S1301 to establish the connection of a client computer and a network printer. This program is controlled by step S1302 to transmit previously the data size of the print data transmitted to a network printer from a client computer after this.

[0056] At step S1303, it judges whether this program had directions of a printing suspend request from the user. Advancing processing to step S1306, if there is a printing suspend request, this program transmits a connection cutting command to a network printer from a client computer, controls it to cut a connection, and ends processing. At step S1303, if there is no printing suspend request from a user, processing will be advanced to step S1304.

[0057] At step S1304, a client computer transmits print data to a network printer. At step S1305, it judges whether the client computer transmitted print data to the network printer altogether. When it is judged that all print data were transmitted, processing is advanced to step S1306, a connection cutting command is transmitted to a network printer, a connection is cut, and processing is ended. When all print data are not transmitted to a network printer, processing is returned to step S1303.

[0058] Drawing 14 is a flow chart showing control of the network printer of the printing

interruption program which operates on a network printer. This printing interruption program is stored in storages, such as ROM which is in a network board 606 as mentioned above and which carried out the graphic display abbreviation.

[0059] At step S1401, it judges whether the connection of a network printer and a computer established this program. Step S1401 is repeated until this connection is established. If a connection is established, processing will progress to step S1402 and a network printer will receive the data size of the print data received from a computer. At step S1403, it judges whether the connection was cut or not. This decision is judged by whether the connection cutting command has been transmitted to the network printer from the computer. If the connection is cut, processing is advanced to step S1406, and as the example 1 explained, a printing interruption program will clear all the data in the buffer holding the received data in a network board, and the print data in a network printer, and will end processing. If the connection is not cut, it progresses to step S1404.

[0060] At step S1404, a network printer receives print data from a computer, and advances processing to step S1405. At step S1405, the network printer measures the print-data size received first and the size of the data actually received from the computer, and compares the sum total size. Printing processing is started when it is judged that all print data were received. When the sum total size of the data actually received from the client computer is smaller than the print-data size received first, it returns to step S1403.

[0061] Thus, in the 2nd example, since a client computer transmits print-data size to a network printer at the beginning of print data When a computer receives a printing interruption command from a user while transmitting print data, by cutting a connection Even when reception finishes and the connection has been cut before all print data are transmitted for the network board connected to the network printer Since interruption of printing can be judged by the network printer side and the receive buffer in the printing data in a network board and a network printer is cleared, a useless output can be cleft and the printing data sent to a degree do not need to be influenced of garbled characters etc., either.

[0062] The [3rd example] Drawing 15 is the flow chart of the print-data transmitting program which operates on a client computer. This print-data transmitting program is a part of network printer control program of this invention. This program is stored in the storage with which the graphic display abbreviation of [ in a network board 606 ] was carried out as mentioned above.

[0063] At step S1501, this program creates the file for saving temporarily the print data (print data) changed into the Page Description Language by the printer driver stored in the hard disk using CPU200.

[0064] At step S1502, this program creates a new file and writes altogether once the print data changed into the Page Description Language in this file. This program is controlled by step S1503 to establish a connection from a client computer to a network printer. In practice, it is establishable because a client computer obtains a network printer to delivery and a response packet for a connection demand packet to a network printer.

[0065] This program is made to control by step S1504 to judge whether the printing suspend request was in CPU200 from the user. If there is a printing suspend request at this time, it will progress to step S1510, and if there is no printing suspend request, it will progress to step S1505.

[0066] In step S1505, this program reads print data from a file, and transmits print data to a network printer at step S1506. At step S1507, this program judges whether all the print data of a file were transmitted, if it transmitted altogether, it will progress to step S1508, and if the printing data which have not been transmitted yet remain, it will return to step S1504.

[0067] Although print data are read from a file and print data are transmitted to a network printer at step S1511 also by step S1510, at step S1512, it judges whether this program analyzed print data using CPU200, and transmitted print data to the end-of-page condition under current transmission. If a form feed command etc. is in printing data, it can be judged that even that is 1 page. If print data are transmitted to a end-of-page condition, a job quit command will be made to add to the page of the last of print data finally, and it will transmit to a network printer, and it progresses to step S1508, otherwise, returns to step S1510.

[0068] A connection with a network printer is cut at step S1508. Cutting of a connection can be judged that the connection was cut, if a computer transmits a disconnect-request packet to a network printer and a response packet is transmitted from a network printer. At step S1509, 200 delete the created file at CPUS1501, and processing is ended.

[0069] The usual processing is performed in a network printer side. When a connection is deleted, reception is finished, but in this example, since the data for a page are in a receive buffer exactly, by the form feed command or the job quit command, since it outputs to the page, data are lost to a receive buffer, and the output of the job sent to the degree is attained, without being garbled.

[0070] Thus, in the 3rd example, since it outputs to the page which received the network printer since printing data were transmitted to the end-of-page condition even if the printing interruption instruction was performed from the user during transmission, when the computer dropped printing data to the file beforehand, the job which came to the degree needs to cease to be garbled.

[0071] The [4th example] The 4th example explains the control which took into consideration the time-out at the time of printing further in processing of the network board 606 explained in the 2nd example.

[0072] In drawing 14 , the counter is turned at the time of the loop formation of step S1403 – step S1405, and even if a certain fixed time amount passes, when it cannot receive to the end of print data, this printing interruption program recognizes that a certain problem arose during the data transmission from a client computer, cuts a connection from a network printer, advances processing to step S1406, and deletes the received data in a network board and a network printer.

[0073] The time of receiving print data begins a counter here. That is, when a counter will become zero if print data are received, and a counter is set to 1000, it is made for time out treatment to happen. If reception of print data is started on the way, the counter is controlled to return to zero again.

[0074] Furthermore, in the 4th example of this invention, although this time out treatment was realized on the printing system in the 2nd example, also in the 1st example, it is realizable, for example.

[0075] Thus, since it controlled [ while abnormalities arose to the computer of a print-data transmitting side and the connection had been connected, ] to cut a connection from a network printer side compulsorily, and to delete received data when long duration print data were not transmitted by carrying out time-out control, and a certain fixed time amount print data were not transmitted, printing became possible normally about the print data sent to a degree.

[0076]

[Effect of the Invention] As explained above, according to invention suggested to the 1st example, the print data which the network printer could know the transmitting termination of print data with the command, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0077] By comparing with the size of the printing data with which the network printer could know the transmitting termination of print data by cutting of a connection, and has been transmitted from the computer according to invention suggested to the 2nd example, it can judge in what has transmitted normal printing data, and the print data transmitted [ to ] are eliminable from the buffer of a network printer while being a page. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0078] According to invention suggested to the 3rd example, in order to drop printing data to the file beforehand, even if a printing suspend request is during transmission of printing data from a user, a computer can stop transmission of print data, after transmitting print data to a printer to a end-of-page condition. consequently, a printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing

processing can be continued normally.

[0079] Even when the transmitting abnormalities of print data arise while the connection had been connected since according to invention suggested to the 4th example a connection is compulsorily cut from a network printer side and received data are deleted when long duration print data are not transmitted to a network printer from a client computer, reinstatement becomes possible and printing also of the print data sent to a degree is attained normally.

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**TECHNICAL FIELD**

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[Field of the Invention] In case this invention prints by transmitting print data through a network from a computer to the printer which uses Page Description Languages, such as logical inference per second, it relates to the storage which memorized the method of interrupting transmission to the midst by which print data are transmitted to the printer from the computer, and interrupting printing processing to it, the equipment, system, and program to realize.

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**PRIOR ART**

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[Description of the Prior Art] Conventionally, after OS's (operating system), such as Windows (trademark) which operates on a computer, change into printer language peculiar to a printer the print data which application created, they are transmitted to a printer. When a suspend request is during transmission of print data from a user, OS is stopped when there is a suspend request from a user about transmission of the print data to a printer. However, even if a computer stops transmission of print data, the print data transmitted to the middle will be received by the receive buffer in a printer. Furthermore, since it was interrupted, the print data which the printer received next will be processed as remaining print data of the print data sent only to the middle of a page. Therefore, when another print data were newly transmitted to a printer, in the printer which uses a Page Description Language, the print data sent newly were connected with the print data sent to the last middle, garbled characters etc. occurred, and normal printing was not able to be continued.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] As explained above, according to invention suggested to the 1st example, the print data which the network printer could know the transmitting termination of print data with the command, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0077] By comparing with the size of the printing data with which the network printer could know the transmitting termination of print data by cutting of a connection, and has been transmitted from the computer according to invention suggested to the 2nd example, it can judge in what has transmitted normal printing data, and the print data transmitted [ to ] are eliminable from the buffer of a network printer while being a page. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0078] According to invention suggested to the 3rd example, in order to drop printing data to the file beforehand, even if a printing suspend request is during transmission of printing data from a user, a computer can stop transmission of print data, after transmitting print data to a printer to a end-of-page condition. consequently, a printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0079] Even when the transmitting abnormalities of print data arise while the connection had been connected since according to invention suggested to the 4th example a connection is compulsorily cut from a network printer side and received data are deleted when long duration print data are not transmitted to a network printer from a client computer, reinstatement becomes possible and printing also of the print data sent to a degree is attained normally.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] Also when a suspend request is during data transmission in this way, the object of this invention is to offer the printing interruption approach and equipment which make it possible to continue printing normally, even if a user performs the next printing.

[0004] Moreover, when the connection of an airline printer and an external device is cut for a certain reason during data transmission and data transmission is not made normally, even if a user performs the next printing, it is in offering the printing interruption approach and equipment which make it possible to continue printing normally.

[0005] Moreover, when long duration transmission of the data is not carried out at an airline printer, it is in offering the printing interruption approach and equipment which make it possible to continue processing of the data and the next printing normally.

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**MEANS**

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[Means for Solving the Problem] In the print system by which the printer was connected with the computer in order to attain the above-mentioned object said computer With a transmitting means to transmit data to an external device, and said transmitting means, while transmitting print data It has the control means which controls a printing suspend request to transmit a printing suspend request to a carrier beam case with said transmitting means. Said printer A receiving means to receive data from an external device, and an analysis means to analyze the data received by said receiving means, A storage means to store the data received by said receiving means, and an elimination means to eliminate the data stored in said storage means, When a printing suspend request exists in the data analyzed by said analysis means, it solves by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means.

[0007] In the print system by which the printer was connected with the computer furthermore, said computer The size information on the print data transmitted to said external device with a transmitting means to transmit data to an external device, and said transmitting means is transmitted with print data. While transmitting print data to an external device, it has the control means which controls a printing suspend request to stop transmission of print data to a carrier beam case. Said printer A storage means to store the print data received by print data, receiving means to receive size information, and said receiving means from an external device, A count means to calculate the size of the print data received by said receiving means, A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means, When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes When the size and said size information on said print data compared with said comparison means differ from each other, it solves by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means.

[0008] In the print system by which the printer was connected with the computer furthermore, said computer With a maintenance means to make a file the print data changed into printer language, and to hold them, a transmitting means to transmit print data to an external device, and said transmitting means While transmitting print data to an external device, a printing suspend request to a carrier beam case It has the control means controlled to interrupt transmission since it continues transmitting print data to the end-of-page condition under transmission. Said printer A receiving means to receive the print data transmitted from an external device, and an expansion means to develop the print data received by said receiving means to an image data, When reception of the print data from an output means to output the image data developed by said expansion means, and said receiving means finishes The print data received with said receiving means are developed with said expansion means, and it solves by having an output-control means to control to output with said output means.

[0009] Furthermore, a receiving means to receive print data from an external device in a power control device, A storage means to store the print data received with said receiving means, An elimination means to eliminate the print data stored in said storage means, A derivation means to derive the hour entry which has passed after said receiving means finally received print data,

When the hour entry drawn by said derivation means becomes larger than the value defined beforehand while transmission of print data was not completed from an external device It is solvable by having the control means controlled to delete the print data stored in said storage means by said elimination means.

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## OPERATION

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(Operation) By using the above-mentioned means, the print data which the network printer could know the transmitting termination of print data with the command, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0011] With other means, the print data which the network printer could know the transmitting termination of print data by cutting of a connection, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[0012] After transmitting print data to a printer to a end-of-page condition, transmission of print data can be interrupted for other means. Consequently, a printer can continue printing processing normally, even if another new print data are transmitted, after transmission of the print data from a computer is stopped.

[0013] With other means, when data are not transmitted from a fixed time amount external device during data reception, a time-out can cut a connection compulsorily. Consequently, even if another new print data are transmitted from a computer, printing processing can be continued normally.

[0014]

[Embodiment of the Invention] First, the virtual print server system which will be the requisite for this invention is explained.

[0015] Drawing 1 is system configuration drawing of the network system which applies a virtual server.

[0016] In drawing 1, the client computer (client PC) assumes that n sets connect. 102, 103, and 104 are client computers, a network cable connects with a network 106, and can perform various kinds of programs, such as an application program, and carry the printer driver which has the function to change print data into the printer language corresponding to a printer. In addition, a printer driver shall support two or more printer language. 101 is a server, and a network cable connects network 106, the file used in a network is accumulated or it supervises a how [ to carry out a network 106 ] condition. The server 101 of this example is equipped with the function which stores further the job information on printing data that the printing demand was advanced from the client 102, 103, and PCs 104, or notifies the information on the job received to IP information and the buffer of a network printer 105 to Client PC. It is a network printer, and it connects with the network 106 through the network interface, and 105 changes at a time into a dot image 1 page of printing data transmitted from Client PC, and prints them for every page. 106 is a network and has connected with Client PC, a server, a network printer, etc.

[0017] Thus, deployment of Client PC and processing which mitigates a network burden are performed by sharing a role with a server 101, a client 102, 103, and PCs 104, and a network printer 105.

[0018] Drawing 2 is the block diagram showing the outline configuration of a client PC 102. In

addition, a client 103 and PCs 104 is the same configuration.

[0019] CPU200 performs the application program stored in HD (hard disk)205, a printer driver program, OS, etc., and performs control which stores required information, a file, etc. temporarily to RAM202 at program execution.

[0020] In ROM201, various data, such as programs, such as a basic I/O program, font data used in the case of a document processing system, and data for templates, are memorized. 202 is RAM and functions as the main memory of CPU200, a work area, etc.

[0021] 203 is FD (floppy disk) drive and can load a network printer control program including this print-data transmitting program memorized by FD204 through the FD drive 203 as shown in drawing 5 etc. to this computer system. 204 is FD, stores the printer driver program etc. and can be stored in storage means, such as HD205.

[0022] The configuration of the content memorized by FD203 is shown in drawing 4 . In drawing 4 , 400 is the content of data of FD204, 401 is volume information which shows the information on data, and a network printer control program is program-code-ized based on the follow chart of a network printer control program including the print-data transmitting program 402 is shown in directory information and 403 is indicated to be to drawing 11 , and 13 and 15. 404 is the associated data.

[0023] 205 is HD and stores the application program, the network printer control program, OS, etc. 206 is a keyboard and a user does the input directions of the instruction of the control command of a device etc. to a client computer. 207 is a display and displays the command inputted from the keyboard 206, the condition of a printer, etc. 208 is a system bus and manages the data flow in Client PC.

[0024] Drawing 3 expresses the memory map in the condition that the network printer control program including this print-data transmitting program was loaded to RAM202, and activation of it was attained.

[0025] 301 is a basic I/O program, and when the power source of this control unit is turned on, it is a field in which the close program which has the IPL (initial program low TINGU) function for OS to be read into RAM202 from HD205, and to make actuation of OS start etc. is. 302 is OS, associated data is developed by a network printer control program and 304 303, respectively, and the work area where CPU200 performs a network printer control program is taken 305.

[0026] Drawing 6 is the block diagram showing the outline configuration of the network printer 105 in this example. At this example, as a network printer, although the laser beam printer (LBP) is used, it is not restricted to this and it cannot be overemphasized that the printer of other methods may be used.

[0027] 601 is CPU and controls the whole equipment. 602 is ROM/RAM and contains the buffer which stores temporarily the control program which controls CPU601, a constant data, and a transmitted and received data. The printing interruption program ( drawing 12 , 14) of this invention is also stored here.

[0028] 605 memorizes the control program and data which are the storage section, for example, are performed by the data transmitted and received and CPU501 like a hard disk. 603 is a display and displays a content, an actuation situation, etc. of the data stored temporarily at ROM / RAM602, and the data memorized by the storage section 605.

[0029] 604 is the printer printing section and carries out the printout of the bit map data generated by CPU601 based on the program memorized by ROM/RAM602. 606 is a network board and communicates data information, such as an external device and printing data, such as a client computer (client PC) and a server, and job information, through this communications department. Furthermore, the network board 606 has RAM, CPU, and ROM which carried out the graphic display abbreviation, and has intelligence nature. The printing interruption program of this invention shall be memorized by ROM of this network board 606.

[0030] Although this example showed the example in which the printing interruption program of this invention is stored in the network board, it cannot be overemphasized that it may not restrict to this, this printing interruption approach can be realized even if stored in ROM602 in a network printer 105, and you may mount in a network printer 105 through external memory means, such as FD and CD-ROM.

[0031] 607 is a communication line and connects a network board 606 and a network.

[0032] Moreover, although the graphic display abbreviation was carried out, in the network printer 105, it shall also have the control unit (control panel) which is a directions input means for a user to do direct directions.

[0033] Drawing 7 is drawing showing the client PC in the system of this invention, and the software configuration of module of a server.

[0034] As for a network printer and 702, 701 is [ the software configuration of module of Client PC and 703 ] the software configurations of module of a server. 704 is an application module which takes out printing directions to a network printing system, and, for the printer monitor for virtual printers, and 709, as for a virtual print manager and 711, the control monitor for network printers and 710 are [ the printer driver by which 705 is included in GDI of Windows and 706 is incorporated in Windows, and 707 / the printer spooler in Windows, and 708 / the virtual print server API (Application interface) and 712 ] virtual printer server services.

[0035] The virtual print manager 710, the virtual print server API 711, and the virtual print server service 712 exist in both Client PC and a server. Henceforth, a virtual print server, a call, and this system are called a virtual print server system for what doubled the virtual print server service (client) which constitutes the virtual print server service 712, and virtual print server service (server).

[0036] The actuation which prints from a client PC 102 to a network printer 105 in said configuration is explained. In this example, it explains taking the case of Windows. The flow of the printing processing which carries out a printing demand from Client PC to a server is expressed to drawing 8 , and the flow of the printing processing which gives printable authorization from a server to Client PC, and is transmitted to a printer is expressed with drawing 9 . Here, the already explained block diagram is made to continue explanation using the same sign. The flow of printing processing is explained using this drawing 8 R> 8 and drawing 9 .

[0037] On a client PC 702 (102), application 704 starts printing through GDI705. GDI notifies initiation of printing to the Windows spooler 707 and the print monitor 708 for virtual print servers. The print monitor 708 for virtual print servers which received initiation of printing requests initiation from the virtual print server service (server) 712 on a server 703 (101) for preservation of print data from this via the virtual print server service (client) 712. It is required that GDI705 should change print data into printer language at a printer driver 706. The print data changed into printer language are spooled to the Windows spooler 707. On the other hand, the print monitor 708 for virtual print servers receives the print data spooled to the Windows spooler 707 from the Windows spooler 707, and passes the print data to the virtual print server service (client) 712. The virtual print server service (client) 712 saves the received print data at the temporary file in the virtual print spooler 801 in HD205 of drawing 2 which carried out the graphic display abbreviation temporarily. When all print data are saved at the temporary file in the virtual print spooler 801 in HD205, the virtual print server service (client) 712 notifies preservation termination of print data to the virtual print server service (server) 712 on a server 703 (101), and requests printing. Here, virtual print server service is using the same module by Client PC and the server, and can use it properly with the object for clients, and the object for servers by setting out.

[0038] In drawing 9 , it is drawing having shown actuation until the print job previously registered into virtual print server service becomes the sequence which prints through management of a server and transmits print data to a network printer actually. The virtual print server service (server) 712 issues the directions which can be printed to the client PC which became the sequence of printing. The virtual print server service (client) 712 which received the directions reads the print data temporarily saved by the above-mentioned at the virtual print spooler 801, and passes them to the control monitor 709 for network printers. The control monitor 709 for network printers lets a printing communications protocol pass, and prints print data with delivery and a network printer 701 to a network printer 701.

[0039] The actuation which notifies the status of a network printer 701 to Client PC is explained. Here, it explains taking the case of Windows. Printer status flow is shown in drawing 10 .

[0040] The virtual print server service (server) 712 requests collection of the status of a

network printer 701 from the SNMP manager 1002 at intervals of 5 seconds (default) in this example. The SNMP manager 1002 requests a status collection demand from a network printer 701. A network printer 701 returns the current printer status. The virtual print server service (server) 712 performs the change notice of the status to KURAIAN PC which is using this network printer 701, when the status of a network printer 701 changes. The virtual print server service 712 in Client PC (client) receives the change notice of the printer status taken out from the server, and it saves the printer status at the registry 1001 in RAM in Client PC. Application 704 can acquire the printer status saved via the virtual printer server API 711 at registry 1001.

[0041] Thus, a virtual print server system processes printing.

[0042] It is the case where WindowsNT (trademark) is used, and in this, a print monitor 708, a virtual print spooler, the virtual print server service (client/server) 712, and the network printer control monitor 709 are newly made from this invention, and this example is a standard module for WindowsNT except it. However, it can build by other OS's, such as OS/2 instead of what is restricted to this.

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[Translation done.]

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**EXAMPLE**

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The [1st example] In the 1st example, processing of the client computer which is a transmitting side shows the example which copes with printing interruption processing.

[0044] Drawing 11 is a flow chart showing control of the computer of the print-data transmitting program which operates on a client computer (following computer). This print-data transmitting program is a part of network printer control program of this invention, and is stored in ROM201, RAM202, or HD205.

[0045] First, if directions of printing processing initiation are received from a user, this print-data transmitting program will start and it will progress to step S1101. The connection of a network printer and a client computer is established at step S1101. At step S1102, it judges whether there was any printing suspend request from a user. If there is a printing suspend request, it will progress to step S1105, and if there is no printing suspend request, it will progress step S1103.

[0046] At step S1103, print data are transmitted to a network printer. At step S1104, it judges whether all print data were transmitted. If it transmitted altogether, processing will be advanced to step S1106. If it has not transmitted to the end of print data, it will return to step S1102. In S1106, delivery and a connection are cut for a connection's cutting command to a network printer, and processing is ended.

[0047] At step S1105, this print-data transmitting program transmits a printing interruption command for directions of the purport of the printing interruption from a user to a network printer by that of a carrier beam, and processing is advanced to step S1106.

[0048] Drawing 12 is a flow chart showing control of the network printer in the printing interruption program which operates on a network printer. This printing interruption program is stored in the storage which carried out the graphic display abbreviation in the network board 606 as mentioned above.

[0049] At step S1201, it judges whether the connection with a client computer established the printing interruption program. Step S1201 is repeated until a connection is established. If it is judged that a connection is established, processing will progress to step S1202. At step S1202, it judges whether the connection with a client computer was cut. CPU on a network board judges this decision by transmitting a connection cutting command to a network printer from a computer. If printing is started and a connection cutting command is not transmitted when a connection is cut, it progresses to step S1203. Although printing initiation was judged by transmission of a connection cutting command here, transmitting termination of a job may be judged by judging whether the job quit command of a print job was received from the client computer besides this.

[0050] At step S1203, print data are received from a client computer. At step S1204, the print data which the network printer received judge whether it is a printing interruption command. This decision is judged when CPU of a network board 606 analyzes print data. Into the print data which the network board 606 analyzed, if it is not a printing interruption command, processing will be returned to step S1202. If the printing interruption command is included in print data, it will progress to step S1205.

[0051] At step S1205, the network board 606 which judged the printing interruption command clears the buffer holding the received data in a network board, and the print data in a network



printer, and ends processing. The clearance of this buffer deletes all the data in a buffer so that the data sent to a degree can be printed normally. The print data (print data) in a network printer are made to control so that a network printer deletes print data when a network board transmits a Delete command to a network printer.

[0052] Thus, in the 1st example, since the network board connected to the network printer by transmitting a printing interruption command to a network printer can judge interruption of printing and clears the buffer of both in a network board and a network printer when a computer receives a printing interruption command to a network printer while transmitting print data, a useless output can be cleft and the printing data sent to a degree do not need to be influenced of garbled characters etc., either.

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[Translation done.]

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** It is system configuration drawing of the network system which applies the virtual server of this operation.

**[Drawing 2]** It is the block diagram showing the outline configuration of the client computer in drawing 1 .

**[Drawing 3]** It is drawing showing the memory map when developing a program from FD shown in RAM in drawing 2 at drawing 4 .

**[Drawing 4]** It is drawing showing the memory map showing the data inside FD in drawing 2 .

**[Drawing 5]** It is drawing showing the relation between the client computer in drawing 1 , and FD in drawing 2 .

**[Drawing 6]** It is the block diagram showing the outline configuration of the network printer in drawing 1 .

**[Drawing 7]** It is drawing showing the client computer concerning the gestalt of this operation, and the software configuration of module of a server.

**[Drawing 8]** It is a flow chart showing the flow of processing of the print monitor about the print facility using a virtual server.

**[Drawing 9]** It is a flow chart showing the control flow of the print monitor about the print facility using a virtual server.

**[Drawing 10]** It is drawing showing the flow of the printing processing at the time of carrying out a printing demand from the client in drawing 1 to a server.

**[Drawing 11]** It is the flow chart of actuation of the computer in which the printing interruption method of the 1st example of this invention is shown.

**[Drawing 12]** It is the flow chart of actuation of the network printer in which the printing interruption method of the 1st example of this invention is shown.

**[Drawing 13]** It is the flow chart of actuation of the computer in which the printing interruption method of the 2nd example of this invention is shown.

**[Drawing 14]** It is the flow chart of actuation of the network printer in which the printing interruption method of the 2nd example of this invention is shown.

**[Drawing 15]** It is the flow chart of actuation of the network printer in which the printing interruption method of the 3rd example of this invention is shown.

**[Description of Notations]**

101 Server

102-104 Client computer (client PC)

105 Network Printer

106 Network

200 CPU

201 ROM

202 RAM

203 FD Drive

204 FD (Floppy Disk)

205 HD (Hard Disk)

206 Keyboard  
207 Display  
208 System Bus  
300 Memory Map of RAM  
301 Basic I/O Program  
302 OS  
303 Network Printer Control Program  
304 Associated Data  
305 Work Area  
400 Memory Map of FD  
401 Volume Information  
402 Directory Information  
403 Network Printer Control Program  
404 Associated Data  
601 CPU  
602 ROM/RAM  
603 Storage Section  
604 Display  
605 Printer Printing Section  
606 Communications Department  
607 Communication Line  
701 Network Printer  
702 Client (Client PC)  
703 Server  
704 Application  
705 GDI  
706 Printer Driver  
707 Windows Spooler  
708 Printer Monitor for Virtual Print Servers  
709 Control Monitor for Network Printers  
710 Virtual Print Manager  
711 Virtual Print Server API  
712 Virtual Print Server (Virtual Print Server Service)  
801 Virtual Print Spooler  
1001 Registry  
1002 SNMP Manager

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[Translation done.]

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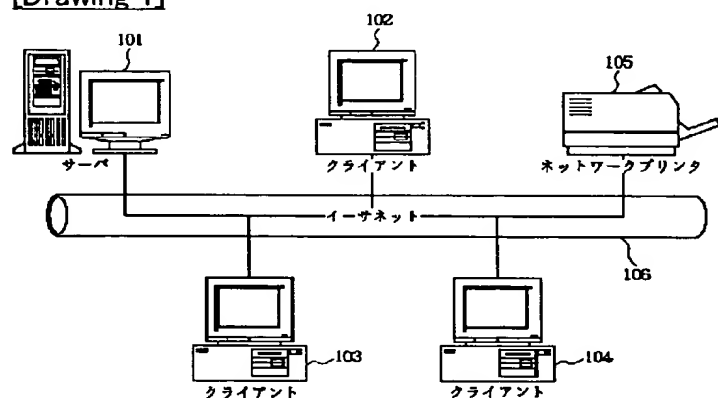
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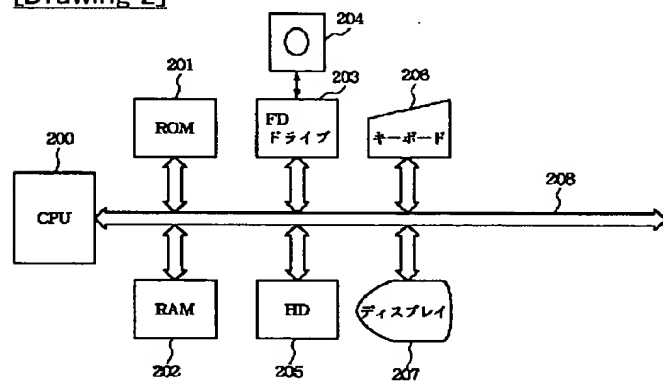
3.In the drawings, any words are not translated.

**DRAWINGS**

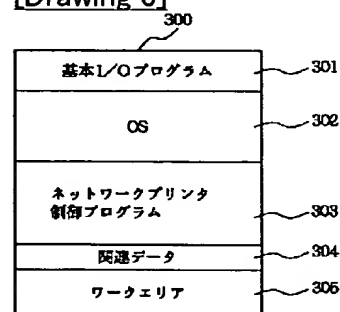
**[Drawing 1]**



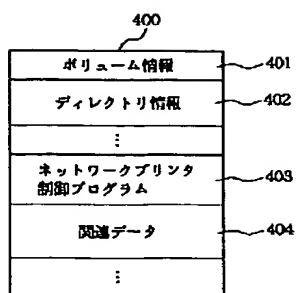
**[Drawing 2]**



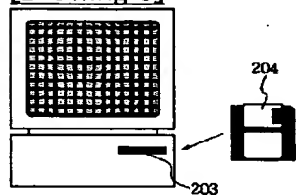
**[Drawing 3]**



**[Drawing 4]**

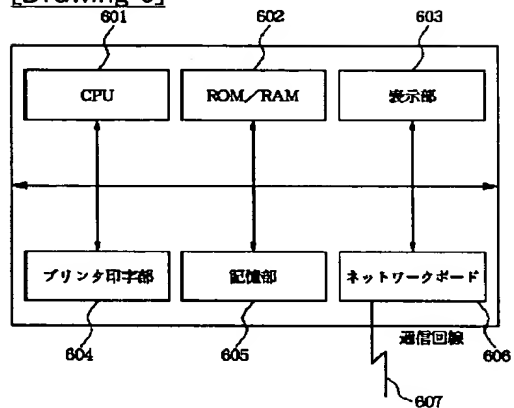


[Drawing 5]

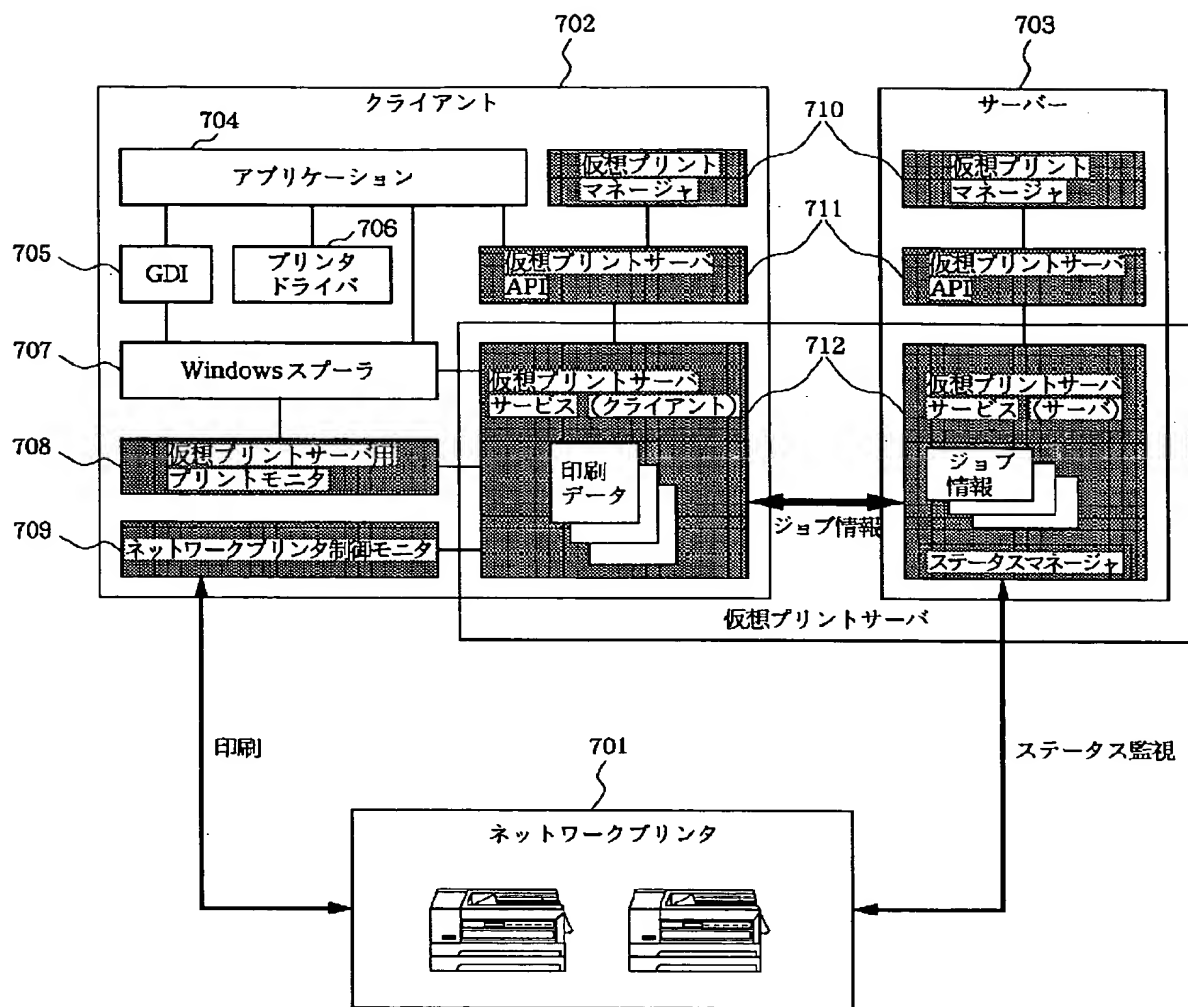


ネットワークプリンタの構成

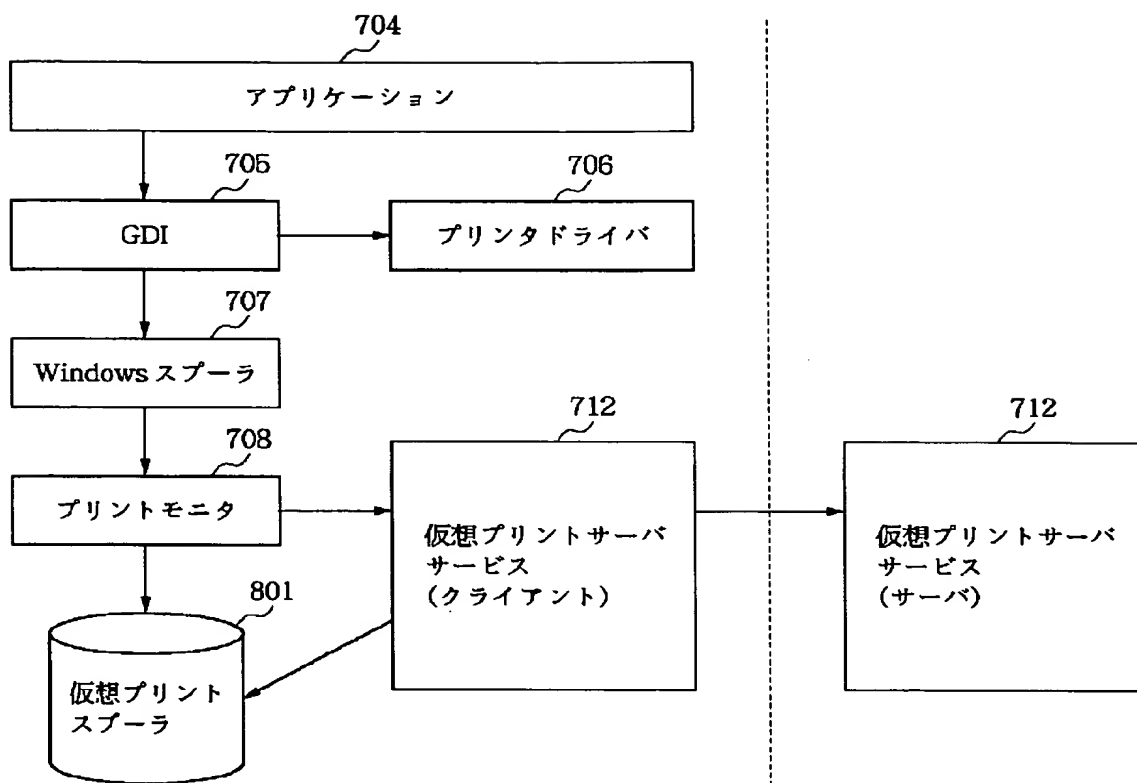
[Drawing 6]



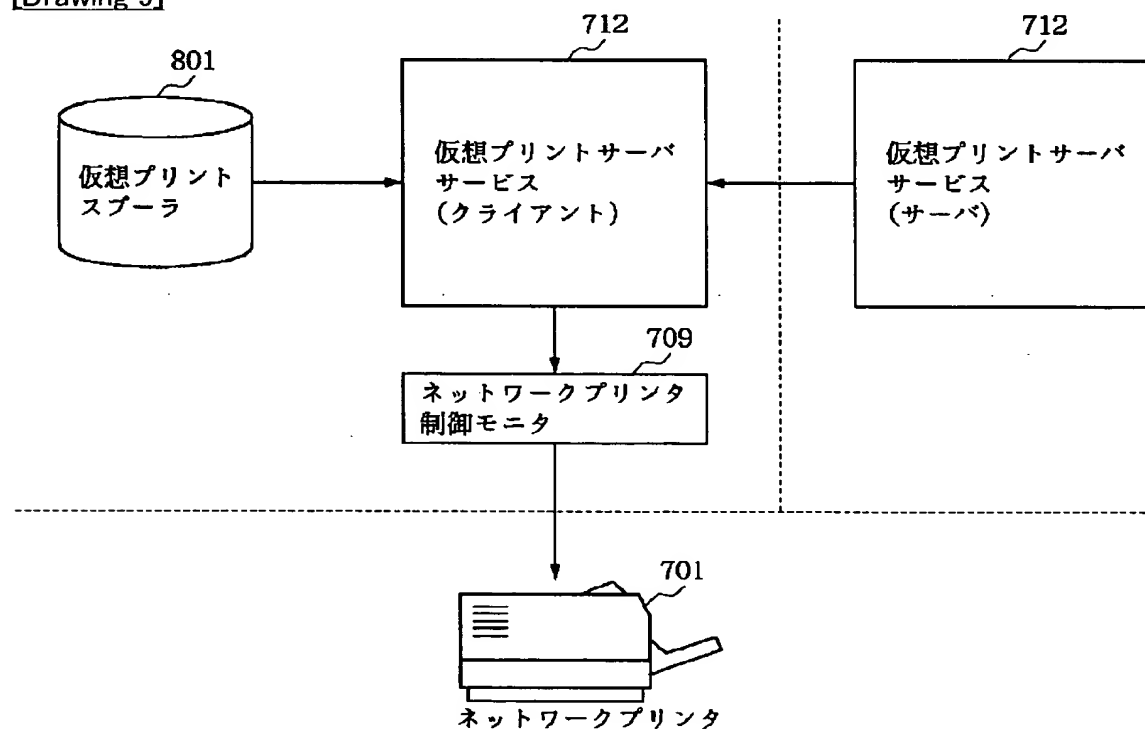
[Drawing 7]



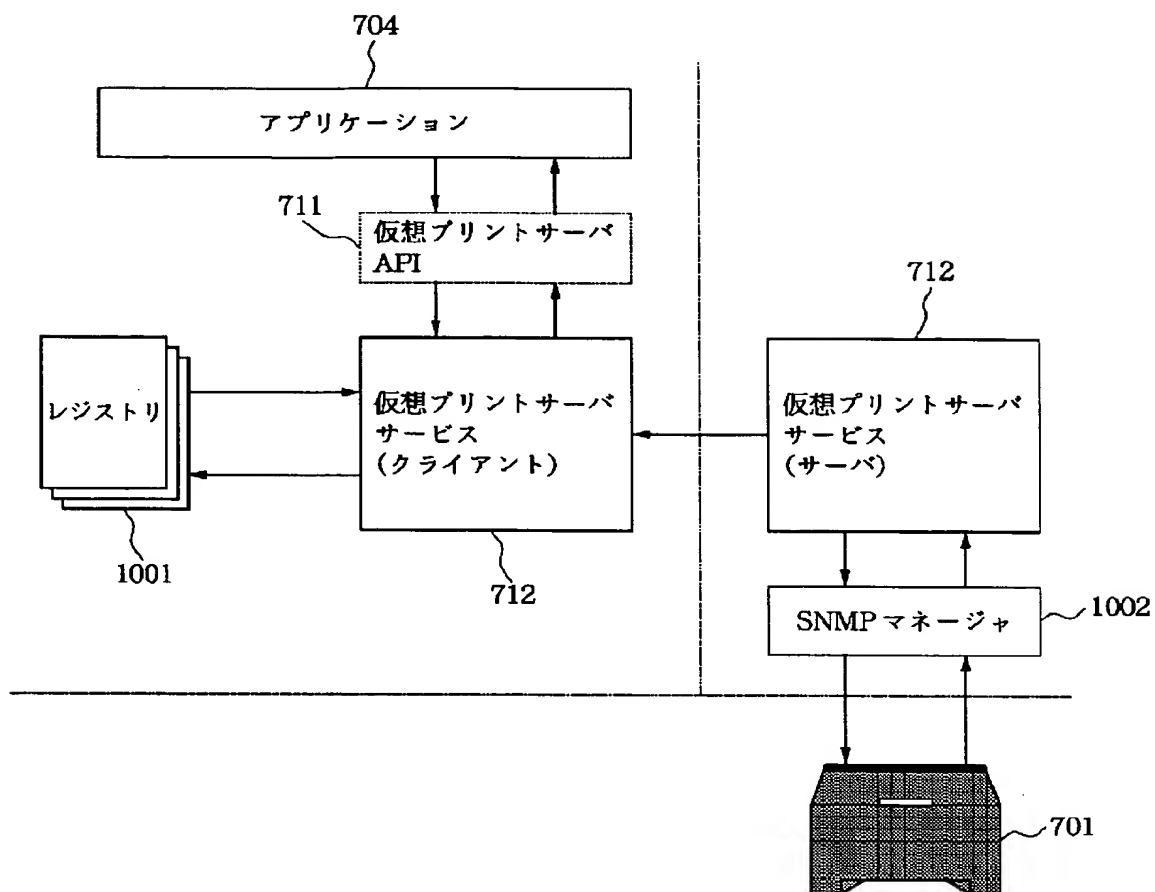
[Drawing 8]



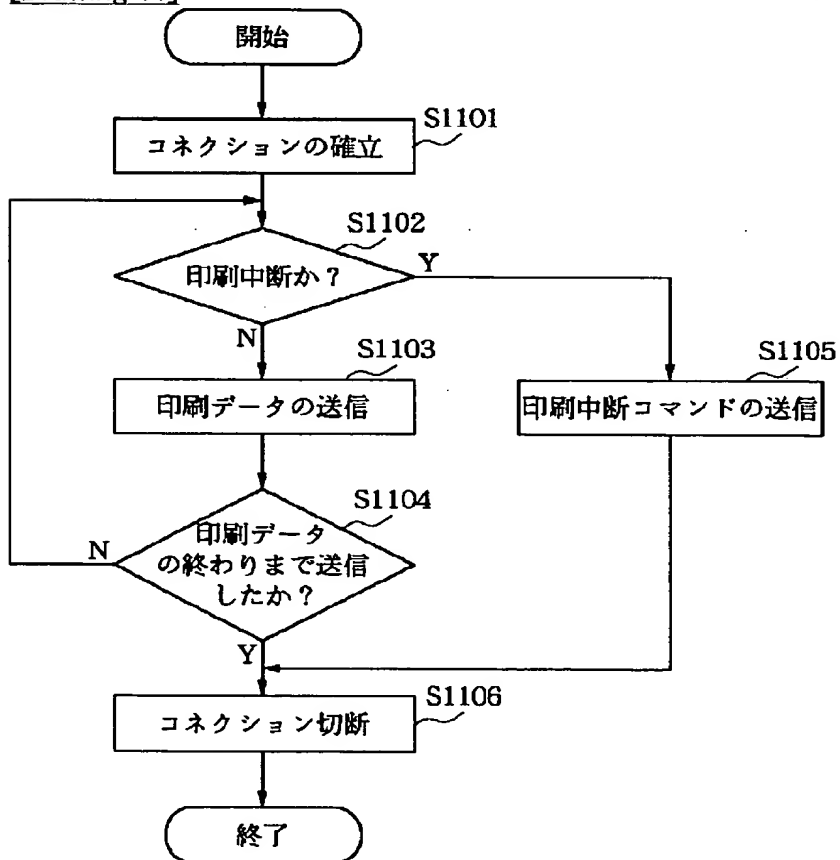
[Drawing 9]



[Drawing 10]

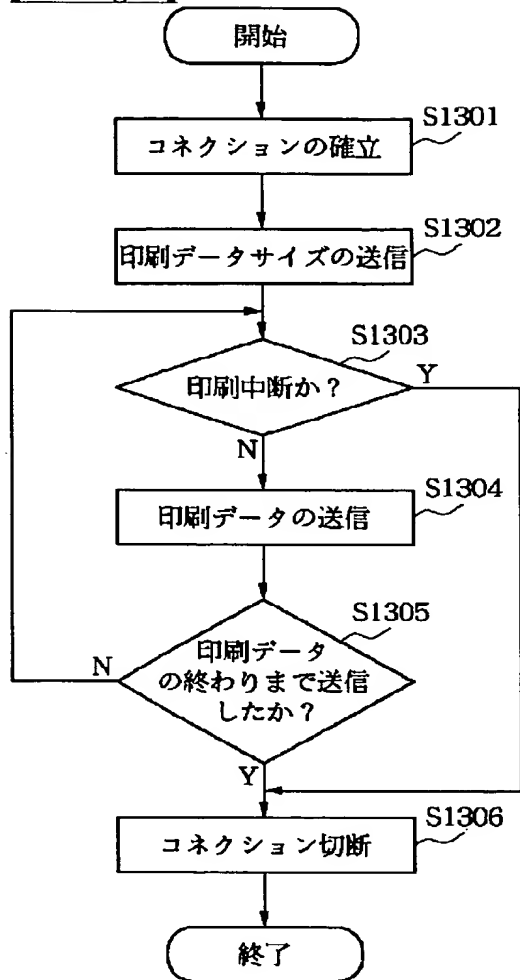


[Drawing 11]

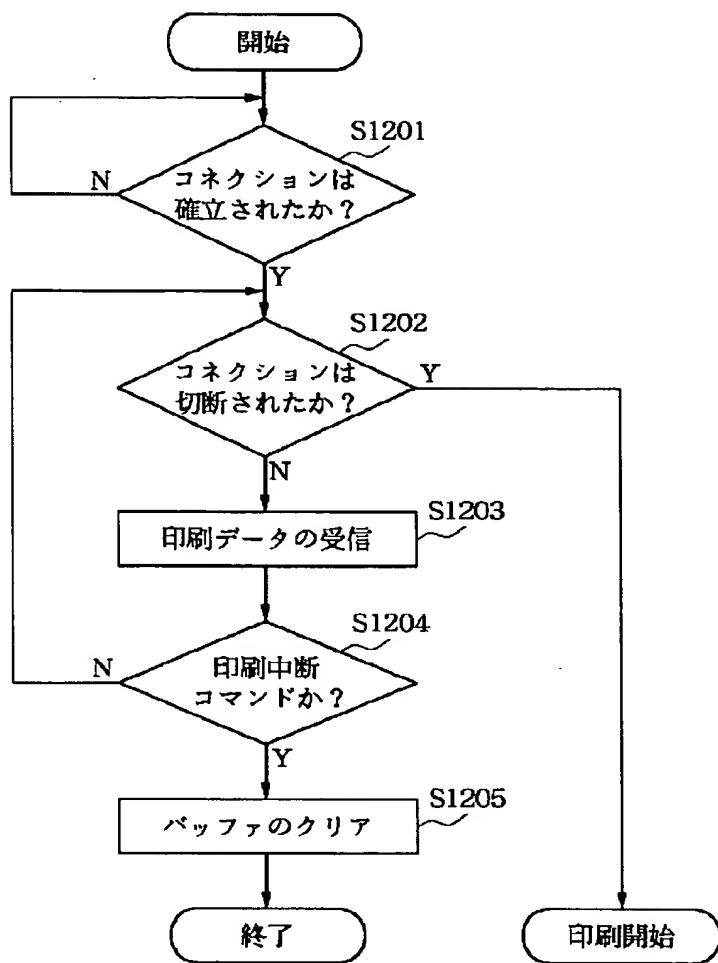




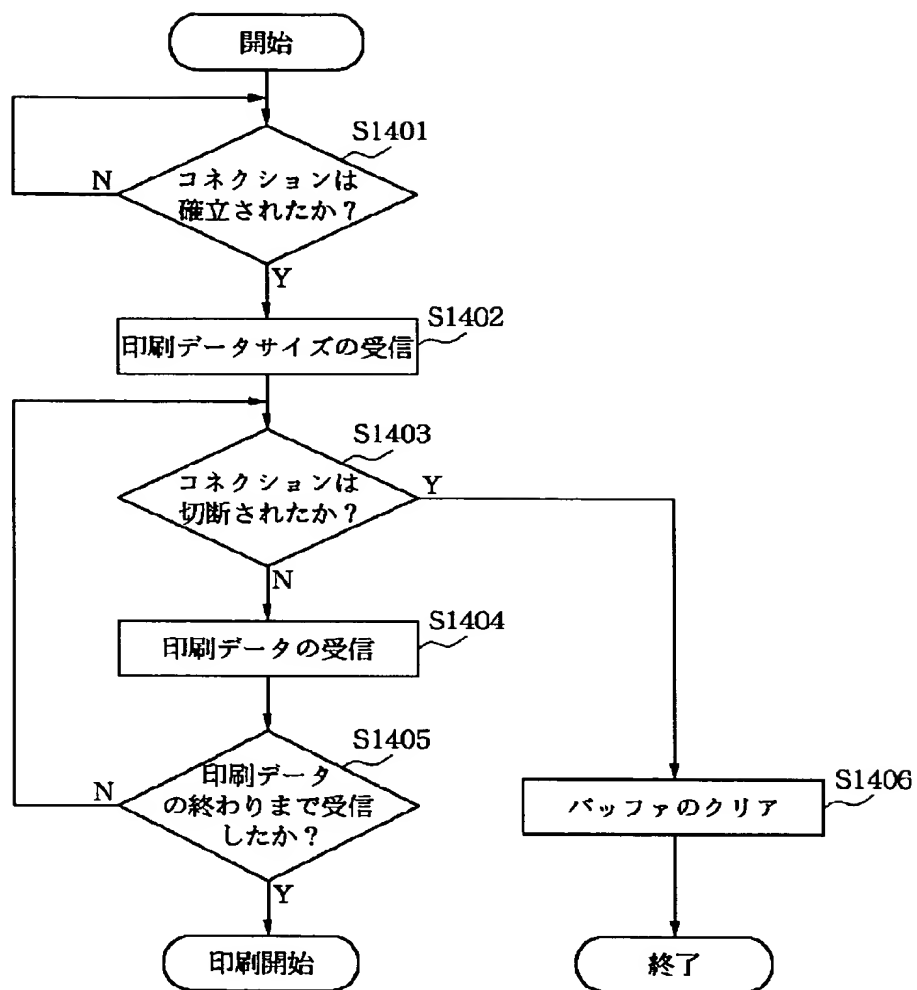
[Drawing 13]



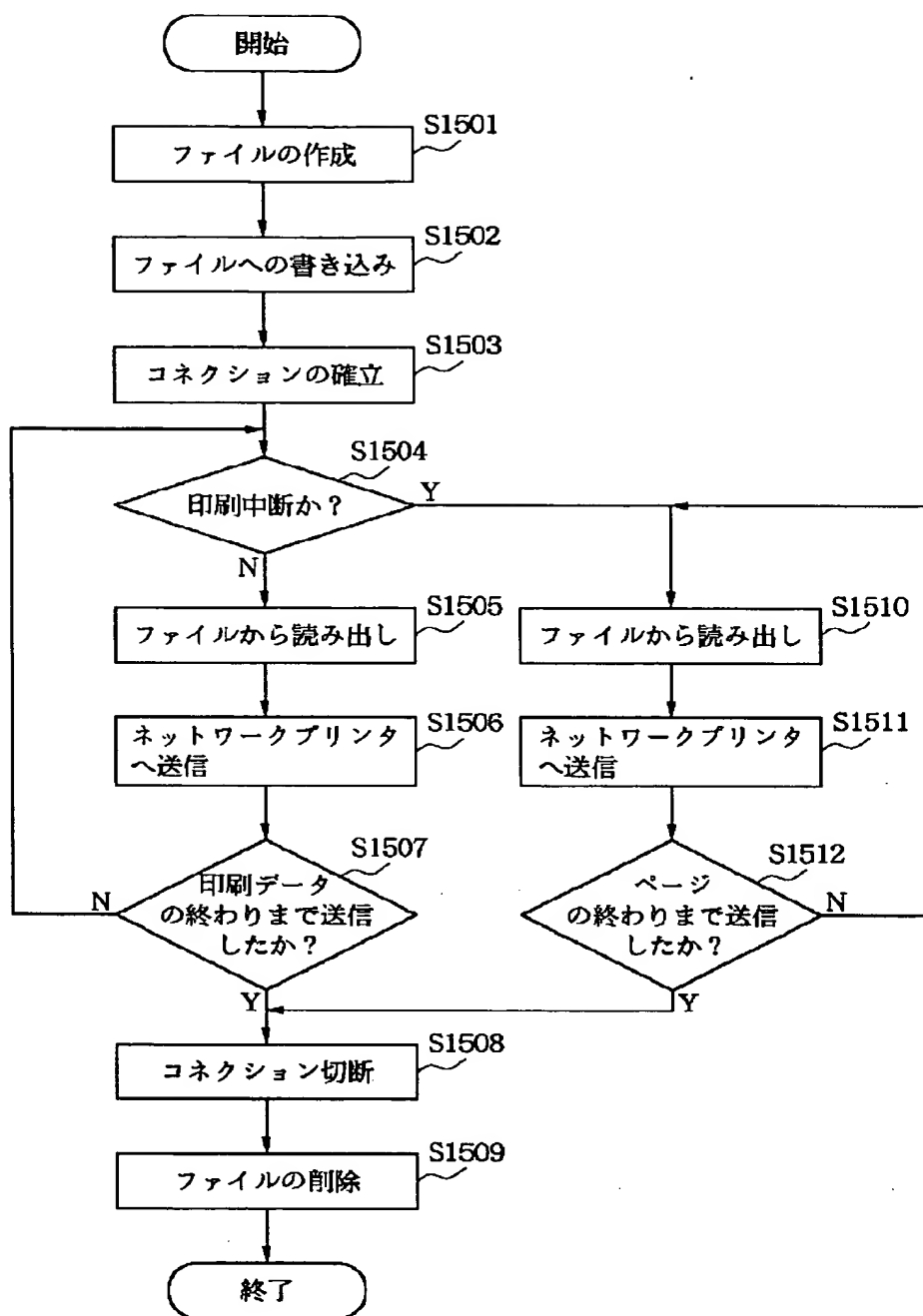
[Drawing 12]



[Drawing 14]



[Drawing 15]



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**CORRECTION OR AMENDMENT**

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[Application number] Japanese Patent Application No. 9-268664

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G06F 3/12

G06F 13/00

[F]

B41J 29/38            Z

B41J 5/30            Z

G06F 3/12           K

G06F 3/12           A

G06F 3/12           D

G06F 13/00        351 F

[Procedure amendment]

[Filing Date] January 7, Heisei 16 (2004. 1.7)

[Procedure amendment 1]

[Document to be Amended] Description

[Item(s) to be Amended] The name of invention

[Method of Amendment] Modification

[The content of amendment]

[Title of the Invention] A power control device, a print system, and the printing interruption approach

[Procedure amendment 2]

[Document to be Amended] Description

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[The content of amendment]

[Claim(s)]

[Claim 1]

A receiving means to receive print data and size information from an external device,

A storage means to store the print data received by said receiving means,

A count means to calculate the size of the print data received by said receiving means.



A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means,

An elimination means to eliminate the data stored in said storage means,

The control means controlled to eliminate the data stored in said storage means with said elimination means when reception of the print data from said receiving means finishes and the size and said size information on said print data change with said comparison means

The power control device characterized by \*\*\*\*(ing).

[Claim 2]

An expansion means to develop the data stored in said storage means to an image data,

The output means which carries out the printout of the image data developed with said expansion means

The power control device according to claim 1 characterized by \*\*\*\*(ing).

[Claim 3]

In a print system including an information processor and an airline printer,

Said information processor,

The size information on the print data which should be printed with said airline printer is transmitted with print data, and while transmitting print data to an external device, it has the control means which controls a printing suspend request to stop transmission of print data to a carrier beam case,

Said airline printer,

The print data which should be printed, and a receiving means to receive size information,

A storage means to store the print data received by said receiving means,

A count means to calculate the size of the print data received by said receiving means,

A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means,

An elimination means to eliminate the data stored in said storage means,

The elimination control means controlled to eliminate the data stored in said storage means with said elimination means when reception of the print data from said receiving means finishes and the size and said size information on said print data change with said comparison means

The print system characterized by \*\*\*\*(ing).

[Claim 4]

It is the print system according to claim 3 characterized by said information processor transmitting print data to said airline printer after the server which is performing printing sequence management of the job of the print data of said information processor is further connected to said print system and said server gives transmitting authorization of print data to said information processor.

[Claim 5]

It is the printing interruption approach in the airline printer connected with an information processor,

The receiving process which makes said airline printer receive print data and size information from said information processor,

The storage process which makes the print data received at said receiving process store in a storage means,

The count process which makes the size of the print data received at said receiving process calculate,

The comparison process which makes the size of said print data calculated at said count process compare with said size information received at said receiving process,

The elimination process which eliminates the data stored in said storage means,

The elimination control process made to control to eliminate the data stored in said storage means by said elimination SUTTEPU when reception of the print data in said receiving process finishes and the size and said size information on said print data differ from each other at said comparison process

\*\*\*\*\* — the printing interruption approach characterized by things.

[Claim 6]



The expansion process which makes an image data develop the data stored in said storage means.

The output process to which the printout of the image data developed at said expansion process is carried out

Furthermore, the printing interruption approach according to claim 5 characterized by containing:

[Claim 7]

It is the printing interruption approach in a print system including an information processor and an airline printer,

The control process which transmits the size information on the print data which should be printed with said airline printer from said information processor with print data, and controls a printing suspend request to stop transmission of print data to a carrier beam case while transmitting print data to an airline printer,

The receiving process which makes said airline printer receive print data and size information,

The storage process which makes the print data received at said receiving process store in a storage means,

The count process which makes the size of the print data received at said receiving process calculate,

The comparison process which makes the size of said print data calculated at said count process compare with said size information received at said receiving process,

The elimination process which eliminates the data stored in said storage means,

The elimination control process made to control to eliminate the data stored in said storage means by said elimination SUTTEPU when reception of the print data in said receiving process finishes and the size and said size information on said print data differ from each other at said comparison process

\*\*\*\*\* — the printing interruption approach characterized by things.

[Claim 8]

Furthermore, the server contained in said print system is received,

The sequence management process of making the printing sequence of the job of the data of said information processor managing,

The authorization process which makes transmitting authorization of data given to said information processor,

The printing interruption approach according to claim 7 characterized by making print data transmit to said airline printer from said information processor after transmitting authorization is given at an implication and said authorization process.

[Claim 9]

A receiving means to receive print data from an external device,

A storage means to store the print data received with said receiving means,

An elimination means to eliminate the print data stored in said storage means,

A derivation means to derive the hour entry which has passed after said receiving means finally received print data,

The control means controlled to delete the print data stored in said storage means by said elimination means when the time amount based on the hour entry drawn by said derivation means exceeds predetermined time while transmission of print data was not completed from an external device

The power control device characterized by \*\*\*\*(ing).

[Claim 10]

Furthermore, an expansion means to develop the print data stored in said storage means to an expansion field to an image data,

The output means which carries out the printout of the image data developed by said expansion field with said expansion means

The power control device according to claim 9 which \*\*\*\*\* \*\*\*\*(ing).

[Claim 11]

Said elimination means is a power control device according to claim 9 characterized by



transmitting the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means.

[Claim 12]

Said control means is a power control device according to claim 9 characterized by controlling to cut a connection with an external device further when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Claim 13]

It is the printing interruption approach in an airline printer.

The receiving process which makes print data receive from an external device.

The storing process which makes the print data received at said receiving process store in a storage means,

The elimination process which makes the print data stored in said storage means eliminate,

The derivation process which makes the hour entry which has passed after receiving print data finally at said receiving process draw,

The control process made to control to delete the print data stored in said storage means at said elimination process when the time amount based on the hour entry drawn at said derivation process becomes larger than predetermined time while transmission of print data was not completed from an external device

\*\*\*\*\* — the printing interruption approach characterized by things.

[Claim 14]

Said elimination process is a power control device according to claim 13 characterized by making the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means transmit.

[Claim 15]

Said control process is the printing interruption approach according to claim 13 characterized by making it control to cut a connection with an external device further when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Procedure amendment 3]

[Document to be Amended] Description

[Item(s) to be Amended] 0006

[Method of Amendment] Modification

[The content of amendment]

[0006]

[Means for Solving the Problem]

A receiving means to receive print data and size information from an external device in a power control device in order to attain the above-mentioned object. A storage means to store the print data received by said receiving means. A count means to calculate the size of the print data received by said receiving means. A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means. When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes When the size and said size information on said print data compared with said comparison means differ from each other, it solves by having the control means controlled to eliminate the data stored in said storage means with said elimination means.

Moreover, it solves by having an expansion means to develop the data stored in said storage means to an image data, and the output means which carries out the printout of the image data developed with said expansion means.

In a print system including an information processor and an airline printer furthermore, said information processor The size information on the print data which should be printed with said airline printer is transmitted with print data. While transmitting print data to an external device, it has the control means which controls a printing suspend request to stop transmission of print data to a carrier beam case. Said airline printer The print data which should be printed, a



receiving means to receive size information, and a storage means to store the print data received by said receiving means. A count means to calculate the size of the print data received by said receiving means. A comparison means to compare the size of said print data calculated by said count means with said size information received with said receiving means. When reception of the print data from an elimination means to eliminate the data stored in said storage means, and said receiving means finishes When the size and said size information on said print data compared with said comparison means differ from each other, it solves by having the elimination control means controlled to eliminate the data stored in said storage means with said elimination means.

Moreover, the server which is performing printing sequence management of the job of the print data of said information processor is further connected to said print system, and after said server gives transmitting authorization of print data to said information processor, said information processor is solved by transmitting print data to said airline printer.

[Procedure amendment 4]

[Document to be Amended] Description

[Item(s) to be Amended] 0007

[Method of Amendment] Modification

[The content of amendment]

[0007]

Furthermore, it sets to the printing interruption approach in the airline printer connected with an information processor. The receiving process which makes said airline printer receive print data and size information from said information processor. The storage process which makes the print data received at said receiving process store in a storage means. The count process which makes the size of the print data received at said receiving process calculate. The comparison process which makes the size of said print data calculated at said count process compare with said size information received at said receiving process. When reception of the print data in the elimination process which eliminates the data stored in said storage means, and said receiving process finishes When the size and said size information on said print data compared at said comparison process differ from each other, it solves by including the elimination control process made to control to eliminate the data stored in said storage means by said elimination SUTTEPU.

Moreover, it solves by including further the expansion process which makes an image data develop the data stored in said storage means, and the output process to which the printout of the image data developed at said expansion process is carried out.

Furthermore, it sets to the printing interruption approach in a print system including an information processor and an airline printer. The size information on the print data which should be printed with said airline printer from said information processor is transmitted with print data. The control process which controls a printing suspend request to stop transmission of print data to a carrier beam case while transmitting print data to an airline printer. The receiving process which makes said airline printer receive print data and size information. The storage process which makes the print data received at said receiving process store in a storage means. The count process which makes the size of the print data received at said receiving process calculate. The comparison process which makes the size of said print data calculated at said count process compare with said size information received at said receiving process. When reception of the print data in the elimination process which eliminates the data stored in said storage means, and said receiving process finishes When the size and said size information on said print data compared at said comparison process differ from each other, it solves by including the elimination control process made to control to eliminate the data stored in said storage means by said elimination SUTTEPU.

Moreover, after transmitting authorization is given at said authorization process to the server contained in said print system including the sequence management process of making the printing sequence of the job of the data of said information processor managing, and the authorization process which makes transmitting authorization of data given to said information processor, it solves by making print data transmit to said airline printer from said information



processor.

[Procedure amendment 5]

[Document to be Amended] Description

[Item(s) to be Amended] 0008

[Method of Amendment] Modification

[The content of amendment]

[0008]

Furthermore, a receiving means to receive print data from an external device and a storage means to store the print data received with said receiving means. An elimination means to eliminate the print data stored in said storage means. A derivation means to derive the hour entry which has passed after said receiving means finally received print data. When the time amount based on the hour entry drawn by said derivation means exceeds predetermined time while transmission of print data was not completed from an external device It solves by having the control means controlled to delete the print data stored in said storage means by said elimination means.

Moreover, it solves by having an expansion means to develop the print data stored in said storage means to an expansion field to an image data, and the output means which carries out the printout of the image data developed by said expansion field with said expansion means.

Moreover, said elimination means is solved by transmitting the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means.

Moreover, said control means is solved by controlling to cut a connection with an external device further, when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Procedure amendment 6]

[Document to be Amended] Description

[Item(s) to be Amended] 0009

[Method of Amendment] Modification

[The content of amendment]

[0009]

Furthermore, the receiving process which it is [ process ] the printing interruption approach in an airline printer, and makes print data receive from an external device, The storing process which makes the print data received at said receiving process store in a storage means, The elimination process which makes the print data stored in said storage means eliminate, The derivation process which makes the hour entry which has passed after receiving print data finally at said receiving process draw, When the time amount based on the hour entry drawn at said derivation process becomes larger than predetermined time while transmission of print data was not completed from an external device It solves by including the control process made to control to delete the print data stored in said storage means at said elimination process.

Moreover, said elimination process is solved by making the command for eliminating the print data stored in said storage means, and eliminating the print data stored in still more nearly another storage means transmit.

Moreover, said control process is solved by making it control to cut a connection with an external device further, when the time amount based on the hour entry drawn by said derivation means becomes larger than predetermined time while transmission of print data was not completed from an external device.

[Procedure amendment 7]

[Document to be Amended] Description

[Item(s) to be Amended] 0010

[Method of Amendment] Deletion

[The content of amendment]

[Procedure amendment 8]



[Document to be Amended] Description  
[Item(s) to be Amended] 0011  
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[The content of amendment]

[Procedure amendment 9]  
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[Item(s) to be Amended] 0012  
[Method of Amendment] Deletion  
[The content of amendment]

[Procedure amendment 10]  
[Document to be Amended] Description  
[Item(s) to be Amended] 0013  
[Method of Amendment] Deletion  
[The content of amendment]

[Procedure amendment 11]  
[Document to be Amended] Description  
[Item(s) to be Amended] 0076  
[Method of Amendment] Modification  
[The content of amendment]  
[0076]

As explained above, according to invention suggested to the 1st example, the print data which the network printer could know the transmitting termination of print data with the command, and were transmitted [ to ] while having been a page are eliminable from the buffer of a network printer. consequently, a network printer is another after transmission of the print data from a computer is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

[Procedure amendment 12]  
[Document to be Amended] Description  
[Item(s) to be Amended] 0079  
[Method of Amendment] Modification  
[The content of amendment]  
[0079]

Even when the transmitting abnormalities of print data arise while the connection had been connected since according to invention suggested to the 4th example a connection is compulsorily cut from a network printer side and received data are deleted when long duration print data are not transmitted to a network printer from a client computer, reinstatement becomes possible and printing also of the print data sent to a degree is attained normally.  
[Effect of the Invention]

As explained above, according to invention of the 1st of this application, it sets to a power control device. Since it controls to eliminate the data stored with an elimination means when the size information which calculated the size of the print data received from the external device, and was received from the external device differs It can judge in what has transmitted normal printing data, and the print data transmitted [ to ] are eliminable from a buffer while being a page. consequently, another, after transmission of the print data from a certain equipment is stopped — new — even if print-data transmission is carried out, printing processing can be continued normally.

Moreover, according to invention of the 2nd of this application, the hour entry which has passed in a power control device after receiving print data at the last from the external device is drawn. Since it controls to delete the print data stored in said storage means by the elimination means when the time amount based on the drawn hour entry exceeds predetermined time while transmission of print data was not completed from an external device Also when print data are



not transmitted from an external device for a long time, received data can be deleted automatically, and the print data transmitted [ to ] can be eliminated from a buffer while being a page. Consequently, even when the transmitting abnormalities of print data arise, reinstatement becomes possible and printing also of the print data sent to a degree is attained normally.

[Translation done.]

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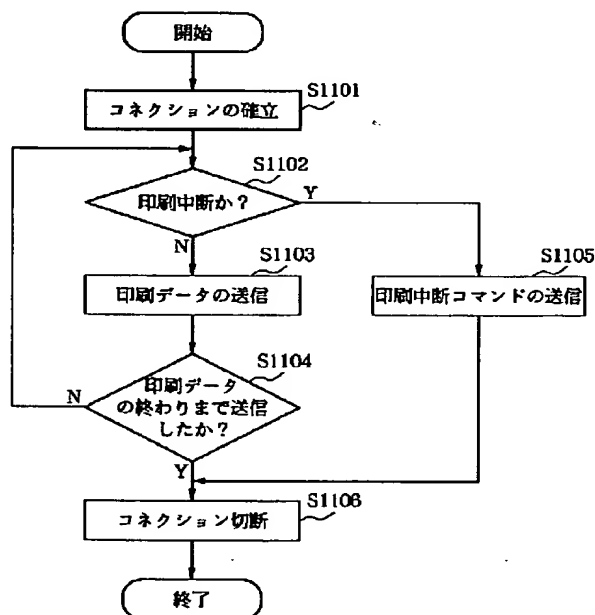
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(54) 【発明の名称】 印刷中断方法および情報処理装置および出力制御装置および印刷中断システムおよび印刷中断プログラムを記憶した記憶媒体

(57) 【要約】

【課題】 データ送信中に中断要求依頼された場合に、次の印刷に支障をきたさないようにする。

【解決手段】 データ送信中に、中断要求がなされた場合はコンピュータがプリンタに中断コマンドを送信し、プリンタは受信データに中断コマンドがあると判断すると、受信したデータをすべてクリアすることにより解決する。



## 【特許請求の範囲】

【請求項 1】 印刷装置にデータを送信する送信手段と、前記送信手段によってプリントデータを送信中に、印刷中断要求を受けた場合に、前記送信手段によって印刷中断要求を送信するよう制御する制御手段とを有することを特徴とする情報処理装置。

【請求項 2】 前記情報処理装置は、前記情報処理装置のプリントデータのジョブの印刷順序管理を行っているサーバと接続されており、前記サーバが、前記情報処理装置にプリントデータの送信許可を与えてから、前記印刷装置にプリントデータを送信することを特徴とする請求項 1 記載の情報処理装置。

【請求項 3】 外部装置からデータを受信する受信手段と、前記受信手段によって受信されたデータを解析する解析手段と、前記受信手段によって受信されたデータを格納する記憶手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記解析手段によって受信されたデータの中に印刷中断要求が解析された場合は、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する制御手段とを有することを特徴とする出力制御装置。

【請求項 4】 更に、前記記憶手段に格納されているデータをイメージデータに展開する展開手段と、前記展開手段により展開されたイメージデータを印刷出力する出力手段とを有することを特徴とする請求項 3 記載の出力制御装置。

【請求項 5】 コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、外部装置にデータを送信する送信手段と、前記送信手段によってプリントデータを送信中に、印刷中断要求を受けた場合に、前記送信手段によって印刷中断要求を送信するよう制御する制御手段とを有し、前記プリンタは、外部装置からデータを受信する受信手段と、前記受信手段によって受信されたデータを解析する解析手段と、前記受信手段によって受信されたデータを格納する記憶手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記解析手段によって解析されたデータの中に印刷中断要求が存在する場合は、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する消去制御手段とを有することを特徴とするプリントシステム。

【請求項 6】 前記プリントシステムには、更に、前記コンピュータのプリントデータのジョブの印刷順序管理を行っているサーバが接続されており、前記サーバが、前記コンピュータにプリントデータの送信許可を与えてから、前記コンピュータは、前記プリンタにプリントデータを送信することを特徴とする請求項 5 記載のプリントシステム。

【請求項 7】 前記プリントシステムは、ネットワークを介していることを特徴とする請求項 5 記載のプリント

システム。

【請求項 8】 情報処理装置から印刷装置にデータを送信させる送信工程と、前記送信工程で、前記印刷装置にデータを送信中に、印刷中断要求を受けた場合には、前記送信工程において印刷中断要求を送信するよう制御させる制御工程と、前記情報処理装置から前記印刷装置にデータを受信させる受信工程と、前記受信工程で受信されたデータを解析させる解析工程と、前記受信工程で受信されたデータを記憶手段に格納させる記憶工程と、前記記憶手段に格納されているデータを消去させる消去工程と、前記印刷装置が、前記解析工程で解析されたデータの中に印刷中断要求が存在する場合は、前記記憶手段に格納されているデータを前記消去工程において消去するよう制御させる消去制御工程とを含むことを特徴とする印刷中断方法。

【請求項 9】 更に、前記情報処理装置のデータのジョブの印刷順序を管理させる順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を有することを特徴とする請求項 8 記載の印刷中断方法。

【請求項 10】 情報処理装置から印刷装置にデータを送信させる送信工程と、前記情報処理装置から前記印刷装置にデータを送信中に、印刷中断要求を受けた場合には、前記送信工程において印刷中断要求を前記印刷装置に送信させるよう制御する制御工程と、前記情報処理装置から前記印刷装置にデータを受信させる受信工程と、前記受信工程で受信されたデータを解析させる解析工程と、前記受信工程で受信されたデータを記憶手段に格納させる記憶工程と、前記記憶手段に格納されているデータを消去させる消去工程と、前記解析工程で解析されたデータの中に印刷中断要求が存在する場合は、前記記憶手段に格納されているデータを前記消去工程で消去させるよう制御する消去制御工程とを含むことを特徴とするコンピュータで読み取り可能なプログラムが記憶された記憶媒体。

【請求項 11】 更に、前記情報処理装置のデータのジョブの印刷順序を管理させる順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を含むことを特徴とする請求項 10 記載の記憶媒体。

【請求項 12】 外部装置にデータを送信する送信手段と、前記送信手段によって外部装置に送信するプリントデータのサイズ情報をプリントデータとともに送信し、外部装置にプリントデータを送信中に、印刷中断要求を受けた場合に、プリントデータの送信を中止するよう制御する制御手段とを有することを特徴とする情報処理装置。

【請求項 13】 前記情報処理装置は、前記情報処理装置のプリントデータのジョブの印刷順序管理を行っているサーバと接続されており、前記サーバが、前記情報処理装置にプリントデータの送信許可を与えてから、前記印刷装置にプリントデータを送信することを特徴とする

請求項 1 2 記載の情報処理装置。

【請求項 1 4】 外部装置からプリントデータとサイズ情報を受信する受信手段と、前記受信手段によって受信されたプリントデータを格納する記憶手段と、前記受信手段によって受信されたプリントデータのサイズを計算する計算手段と、前記計算手段によって計算された前記プリントデータのサイズと前記受信手段によって受信した前記サイズ情報とを比較する比較手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記受信手段からのプリントデータの受信が終わったときに、前記比較手段によって比較した前記プリントデータのサイズと前記サイズ情報とが異なっている場合には、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する制御手段とを有することを特徴とする出力制御装置。

【請求項 1 5】 更に、前記記憶手段に格納されているデータをイメージデータに展開させる展開工程と、前記展開工程で展開されたイメージデータを印刷出力させる出力工程とを含むことを特徴とする請求項 1 4 記載の出力制御装置。

【請求項 1 6】 コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、外部装置にデータを送信する送信手段と、前記送信手段によって前記外部装置に送信するプリントデータのサイズ情報をプリントデータとともに送信し、外部装置にプリントデータを送信中に、印刷中断要求を受けた場合に、プリントデータの送信を中止するよう制御する制御手段とを有し、前記プリンタは、外部装置からプリントデータとサイズ情報を受信する受信手段と、前記受信手段によって受信されたプリントデータを格納する記憶手段と、前記受信手段によって受信されたプリントデータのサイズを計算する計算手段と、前記計算手段によって計算された前記プリントデータのサイズと前記受信手段によって受信した前記サイズ情報とを比較する比較手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記受信手段からのプリントデータの受信が終わったときに、前記比較手段によって比較した前記プリントデータのサイズと前記サイズ情報とが異なっている場合には、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する消去制御手段とを有することを特徴とするプリントシステム。

【請求項 1 7】 前記プリントシステムには、更に、前記情報処理装置のプリントデータのジョブの印刷順序管理を行っているサーバが接続されており、前記サーバが、前記コンピュータにプリントデータの送信許可を与えてから、前記コンピュータは、前記プリンタにプリントデータを送信することを特徴とする請求項 1 6 記載のプリントシステム。

【請求項 1 8】 前記プリントシステムは、ネットワークを介していることを特徴とする請求項 1 6 記載のプリ

ントシステム。

【請求項 1 9】 印刷装置にデータを送信させる送信工程と、前記送信工程で前記印刷装置に送信するプリントデータのサイズ情報をプリントデータとともに送信し、印刷装置にプリントデータを送信中に、印刷中断要求を受けた場合に、プリントデータの送信を中止させるよう制御する制御工程と、情報処理装置から前記印刷装置にプリントデータとサイズ情報を受信させる受信工程と、前記受信工程で受信されたプリントデータを記憶手段に格納させる記憶工程と、前記受信工程で受信されたプリントデータのサイズを計算させる計算工程と、前記計算工程で計算された前記プリントデータのサイズと前記受信工程で受信した前記サイズ情報とを比較させる比較工程と、前記記憶手段に格納されているデータを消去する消去工程と、前記受信工程におけるプリントデータの受信が終わったときに、前記比較工程で比較した前記プリントデータのサイズと前記サイズ情報とが異なっている場合には、前記記憶手段に格納されているデータを前記消去ステップで消去するよう制御させる消去制御工程とを含むことを特徴とする印刷中断方法。

【請求項 2 0】 更に、前記情報処理装置のデータのジョブの印刷順序を管理させる順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を含むことを特徴とする請求項 1 9 記載の印刷中断方法。

【請求項 2 1】 印刷装置にデータを送信させる送信工程と、前記送信工程で印刷装置に送信するプリントデータのサイズ情報をプリントデータとともに送信し、印刷装置にプリントデータを送信中に、印刷中断要求を受けた場合に、プリントデータの送信を中止するよう制御させる制御工程と、情報処理装置から前記プリントデータと前記サイズ情報を受信させる受信工程と、前記受信工程で受信されたプリントデータを記憶手段に格納させる記憶工程と、前記受信工程で受信されたプリントデータのサイズを計算させる計算工程と、前記計算工程で計算された前記プリントデータのサイズと前記受信ステップで受信した前記サイズ情報とを比較させる比較工程と、前記記憶手段に格納されているデータを消去させる消去工程と、前記受信工程におけるプリントデータの受信が終わったときに、前記比較工程で比較した前記プリントデータのサイズと前記サイズ情報とが異なっている場合には、前記記憶手段に格納されているデータを前記消去工程で消去するよう制御させる消去制御工程と、を有することを特徴とするコンピュータで読み取り可能なプログラムが記憶されている記憶媒体。

【請求項 2 2】 更に、前記情報処理装置のデータのジョブの印刷順序を管理させる順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を含むことを特徴とする請求項 2 1 記載の記憶媒体。

【請求項 2 3】 プリンタ言語に変換されたプリントデ

ータをファイルにして保持する保持手段と、前記保持手段に保持されているプリントデータを外部装置に送信する送信手段と、前記送信手段によって外部装置にプリントデータを送信中に、印刷中断要求を受けた場合に、送信中のページの終わりまでプリントデータを送信し続けるよう制御する制御手段と、を有することを特徴とする情報処理装置。

【請求項 24】 プリント言語に変換されたプリントデータの中からページの終了を表すコードを検知する検知手段を更に有し、前記制御手段は、前記検知手段によってページの終了を表すコードを検知するまで送信し続けることによって制御することを特徴とする請求項 23 記載の情報処理装置。

【請求項 25】 前記情報処理装置は、前記情報処理装置のプリントデータのジョブの印刷順序管理を行っているサーバと接続されており、前記サーバが、前記情報処理装置にプリントデータの送信許可を与えてから、前記印刷装置にプリントデータを送信することを特徴とする請求項 23 記載の情報処理装置。

【請求項 26】 コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、プリント言語に変換されたプリントデータをファイルにして保持する保持手段と、外部装置にプリントデータを送信する送信手段と、前記送信手段によって、外部装置にプリントデータを送信中に印刷中断要求を受けた場合に、送信中のページの終わりまでプリントデータを送信し続けてから送信を中断するよう制御する制御手段とを有し、前記プリンタは、外部装置から送信されるプリントデータを受信する受信手段と、前記受信手段によって受信されたプリントデータをイメージデータに展開する展開手段と、前記展開手段によって展開されたイメージデータを出力する出力手段と、前記受信手段からのプリントデータの受信が終わったときに、前記受信手段で受信したプリントデータを前記展開手段によって展開し、前記出力手段で出力するよう制御する出力制御手段とを有することを特徴とするプリントシステム。

【請求項 27】 前記コンピュータは、プリント言語に変換されたプリントデータの中からページの終了を表すコードを検知する検知手段を更に有し、前記制御手段は、前記検知手段によってページの終了を表すコードを検知するまで送信し続けることにより制御することを特徴とする請求項 26 記載のプリントシステム。

【請求項 28】 前記プリントシステムは、更に、前記情報処理装置のプリントデータのジョブの印刷順序管理を行っているサーバが接続されており、前記サーバが、前記コンピュータにプリントデータの送信許可を与えてから、前記コンピュータは、前記プリンタにプリントデータを送信することを特徴とする請求項 26 記載のプリントシステム。

【請求項 29】 前記プリントシステムは、ネットワー

クを介していることを特徴とする請求項 26 記載のプリントシステム。

【請求項 30】 コンピュータに対して、プリント言語に変換されたプリントデータをファイルにして保持手段に保持させる保持工程と、外部装置にプリントデータを送信させる送信工程と、前記送信工程で外部装置にプリントデータを送信中に印刷中断要求を受けた場合に、送信中のページの終わりまでプリントデータを送信し続けてから送信を中断するよう制御させる制御工程と、プリンタに対して、外部装置から送信されるプリントデータを受信させる受信工程と、前記受信工程で受信されたプリントデータをイメージデータに展開させる展開工程と、前記展開工程で展開されたイメージデータを出力させる出力工程と、前記受信工程でプリントデータの受信が終わったときに、前記受信工程で受信したデータを前記展開工程で展開し、前記出力工程で出力するよう制御させる出力制御工程とを含むことを特徴とする印刷中断方法。

【請求項 31】 コンピュータに対して更に、プリント言語に変換されたプリントデータの中からページの終了を表すコードを検知させる検知工程を含み、前記制御工程は、前記検知工程でページの終了を表すコードを検知するまで送信し続けてから送信を中断することにより制御させることを特徴とする請求項 30 記載の印刷中断方法。

【請求項 32】 更に、前記情報処理装置のデータのジョブの印刷順序を管理する順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を含むことを特徴とする請求項 30 記載の印刷中断方法。

【請求項 33】 コンピュータに対して、プリント言語に変換されたプリントデータをファイルにして保持手段に保持させる保持工程と、外部装置にプリントデータを送信させる送信工程と、前記送信工程で外部装置にプリントデータを送信中に印刷中断要求を受けた場合に、送信中のページの終わりまでプリントデータを送信し続けてから送信を中断するよう制御させる制御工程と、プリンタに対して、外部装置から送信されるプリントデータを受信させる受信工程と、前記受信工程で受信されたプリントデータをイメージデータに展開させる展開工程と、前記展開工程で展開されたイメージデータを出力させる出力工程と、前記受信工程でプリントデータの受信が終わったときに、前記受信工程で受信したデータを前記展開工程で展開し、前記出力工程で出力するよう制御させる出力制御工程とを含むことを特徴とするコンピュータ読み取り可能なプログラムが格納された記憶媒体。

【請求項 34】 コンピュータに対して更に、プリント言語に変換されたプリントデータの中からページの終了を表すコードを検知させる検知工程を含み、前記制御工程は、前記検知工程でページの終了を表すコードを検知するまで送信し続けてから送信を中断することにより制



御させることを特徴とする請求項 33 記載の記憶媒体。

【請求項 35】 更に、前記情報処理装置のデータのジョブの印刷順序を管理する順序管理工程と、前記情報処理装置にデータの送信許可を与えさせる許可工程と、を含むことを特徴とする請求項 33 記載の記憶媒体。

【請求項 36】 外部装置からプリントデータを受信する受信手段と、前記受信手段により受信したプリントデータを格納する記憶手段と、前記記憶手段に格納されているプリントデータを消去する消去手段と、前記受信手段により最後にプリントデータを受信してから経過した時間情報を導出する導出手段と、外部装置からプリントデータの送信が終了していない間に、前記導出手段により導出された時間情報に基づく時間が所定時間を越えた場合に、前記消去手段により前記記憶手段に格納されているプリントデータを削除するよう制御する制御手段とを有することを特徴とする出力制御装置。

【請求項 37】 更に、前記記憶手段に格納されているプリントデータをイメージデータに展開領域に展開する展開手段と、前記展開手段により前記展開領域に展開されたイメージデータを印刷出力する出力手段とを有することを特徴とする請求項 36 記載の出力制御装置。

【請求項 38】 前記消去手段は、前記記憶手段に格納されているプリントデータを消去し、更に別の記憶手段に格納されているプリントデータを消去するためのコマンドを送信することを特徴とする請求項 36 記載の出力制御装置。

【請求項 39】 前記制御手段は、外部装置からプリントデータの送信が終了していない間に、前記導出手段により導出された時間情報に基づく時間が所定時間よりも大きくなった場合に、更に外部装置との接続を切断するよう制御することを特徴とする請求項 36 記載の出力制御装置。

【請求項 40】 外部装置からプリントデータを受信させる受信工程と、前記受信工程で受信したプリントデータを記憶手段に格納させる格納工程と、前記記憶手段に格納されているプリントデータを消去させる消去工程と、前記受信工程で最後にプリントデータを受信してから経過した時間情報を導出させる導出工程と、外部装置からプリントデータの送信が終了していない間に、前記導出工程で導出された時間情報に基づく時間が所定時間よりも大きくなった場合に、前記消去工程で前記記憶手段に格納されているプリントデータを削除するよう制御させる制御工程とを含むことを特徴とする印刷中断方法。

【請求項 41】 前記消去工程は、前記記憶手段に格納されているプリントデータを消去し、更に別の記憶手段に格納されているプリントデータを消去するためのコマンドを送信させることを特徴とする請求項 40 記載の出力制御装置。

【請求項 42】 前記制御工程は、外部装置からプリン

トデータの送信が終了していない間に、前記導出手段により導出された時間情報に基づく時間が所定時間よりも大きくなった場合に、更に外部装置との接続を切断するよう制御させることを特徴とする請求項 40 記載の印刷中断方法。

【請求項 43】 外部装置からプリントデータを受信させる受信工程と、前記受信工程で受信したプリントデータを記憶手段に格納させる格納工程と、前記記憶手段に格納されているプリントデータを消去させる消去工程と、前記受信工程で最後にプリントデータを受信してから経過した時間情報を導出させる導出工程と、外部装置からプリントデータの送信が終了していない間に、前記導出工程で導出された時間情報に基づく時間が所定時間よりも大きくなった場合に、前記消去工程で前記記憶手段に格納されているプリントデータを削除するよう制御させる制御工程とを含むことを特徴とするコンピュータ読み取り可能なプログラムが格納された記憶媒体。

【請求項 44】 前記消去工程は、前記記憶手段に格納されているプリントデータを消去し、更に別の記憶手段に格納されているプリントデータを消去するためのコマンドを送信させることを特徴とする請求項 43 記載の記憶媒体。

【請求項 45】 前記制御工程は、外部装置からプリントデータの送信が終了していない間に、前記導出手段により導出された時間情報に基づく時間が所定時間よりも大きくなった場合に、更に外部装置との接続を切断するよう制御させることを特徴とする請求項 43 記載の記憶媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、LIPS等のページ記述言語を使用するプリンタに対して、コンピュータから印刷データをネットワークを介して送信し、印刷を行う際、コンピュータからプリンタへ印刷データが送信されている最中に、送信を中断し、印刷処理を中断する方法および実現する装置およびシステムおよびプログラムを記憶した記憶媒体に関するものである。

【0002】

【従来の技術】従来、コンピュータの上で動作するWindows（登録商標）などのOS（オペレーティングシステム）は、アプリケーションが作成した印刷データをプリンタ特有のプリンタ言語に変換した後、プリンタに送信する。もし印刷データの送信中にユーザから中断要求があった場合には、OSはプリンタへの印刷データの送信をユーザから中断要求があった時点で中止する。しかしながら、コンピュータが印刷データの送信を中止しても、途中まで送信された印刷データはプリンタ内の受信バッファに受信されてしまう。更に、プリンタが次に受信した印刷データを、中断されたためページの途中までしか送られなかった印刷データの残りの印刷データとし

て処理してしまう。したがって、新たに別の印刷データをプリンタへ送信した場合、ページ記述言語を使用するプリンタにおいては、前回途中まで送られた印刷データに新しく送った印刷データがつながってしまい、文字化け等が発生して、正常な印刷を続けることができなかった。

#### 【0003】

【発明が解決しようとする課題】本発明の目的は、このようにデータ送信中に中断要求があった場合にも、ユーザが次の印刷を行っても正常に印刷を続けることを可能にするような印刷中断方法および装置を提供することにある。

【0004】また、データ送信中に印刷装置と外部装置とのコネクションがなんらかの理由により切断され、正常にデータ送信がなされなかった場合に、ユーザが次の印刷を行っても正常に印刷を続けることを可能にする印刷中断方法および装置を提供することにある。

【0005】また、印刷装置にデータが長時間送信されてこない場合に、そのデータの処理と次の印刷とを正常に続けることを可能にする印刷中断方法および装置を提供することにある。

#### 【0006】

【課題を解決するための手段】上記の目的を達成するため、コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、外部装置にデータを送信する送信手段と、前記送信手段によってプリントデータを送信中に、印刷中断要求を受けた場合に、前記送信手段によって印刷中断要求を送信するよう制御する制御手段とを有し、前記プリンタは、外部装置からデータを受信する受信手段と、前記受信手段によって受信されたデータを解析する解析手段と、前記受信手段によって受信されたデータを格納する記憶手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記解析手段によって解析されたデータの中に印刷中断要求が存在する場合は、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する消去制御手段とを有することにより解決する。

【0007】さらに、コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、外部装置にデータを送信する送信手段と、前記送信手段によって前記外部装置に送信するプリントデータのサイズ情報をプリントデータとともに送信し、外部装置にプリントデータを送信中に、印刷中断要求を受けた場合に、プリントデータの送信を中止するよう制御する制御手段とを有し、前記プリンタは、外部装置からプリントデータとサイズ情報を受信する受信手段と、前記受信手段によって受信されたプリントデータを格納する記憶手段と、前記受信手段によって受信されたプリントデータのサイズを計算する計算手段と、前記計算手段によって計算された前記プリントデータのサイズと前記受信手段

によって受信した前記サイズ情報とを比較する比較手段と、前記記憶手段に格納されているデータを消去する消去手段と、前記受信手段からのプリントデータの受信が終わったときに、前記比較手段によって比較した前記プリントデータのサイズと前記サイズ情報とが異なっている場合には、前記記憶手段に格納されているデータを前記消去手段によって消去するよう制御する消去制御手段とを有することにより解決する。

【0008】さらに、コンピュータとプリンタが接続されたプリントシステムにおいて、前記コンピュータは、プリンタ言語に変換されたプリントデータをファイルにして保持する保持手段と、外部装置にプリントデータを送信する送信手段と、前記送信手段によって、外部装置にプリントデータを送信中に印刷中断要求を受けた場合に、送信中のページの終わりまでプリントデータを送信し続けてから送信を中断するよう制御する制御手段とを有し、前記プリンタは、外部装置から送信されるプリントデータを受信する受信手段と、前記受信手段によって受信されたプリントデータをイメージデータに展開する展開手段と、前記展開手段によって展開されたイメージデータを出力する出力手段と、前記受信手段からのプリントデータの受信が終わったときに、前記受信手段で受信したプリントデータを前記展開手段によって展開し、前記出力手段で出力するよう制御する出力制御手段とを有することにより解決する。

【0009】さらに、出力制御装置において、外部装置からプリントデータを受信する受信手段と、前記受信手段により受信したプリントデータを格納する記憶手段と、前記記憶手段に格納されているプリントデータを消去する消去手段と、前記受信手段により最後にプリントデータを受信してから経過した時間情報を導出する導出手段と、外部装置からプリントデータの送信が終了していない間に、前記導出手段により導出された時間情報が予め定められた値よりも大きくなった場合に、前記消去手段により前記記憶手段に格納されているプリントデータを削除するよう制御する制御手段とを有することにより解決できる。

【0010】（作用）前述の手段を用いることにより、ネットワークプリンタが印刷データの送信中止をコマンドによって知ることができ、ページの途中までしか送信されなかった印刷データをネットワークプリンタのパッファから消去することができる。その結果、ネットワークプリンタは、コンピュータからの印刷データの送信が中止された後、別の新しい印刷データ送信されても、正常に印刷処理を続けることができる。

【0011】他の手段では、ネットワークプリンタが印刷データの送信中止をコネクションの切断によって知ることができ、ページの途中までしか送信されなかった印刷データをネットワークプリンタのパッファから消去することが出来る。その結果、ネットワークプリンタは、

コンピュータからの印刷データの送信が中止された後、別の新しい印刷データ送信されても、正常に印刷処理を続けることができる。

【0012】他の手段では、ページの終わりまで印刷データをプリンタに送信してから、印刷データの送信を中断することができる。その結果、プリンタは、コンピュータからの印刷データの送信が中止された後、別の新しい印刷データが送信されても、正常に印刷処理を続けることができる。

【0013】他の手段では、データ受信中にある一定時間外部装置からデータが送信されない場合に、タイムアウトによって強制的にコネクションを切断できる。その結果、コンピュータから別の新しい印刷データが送信されても、正常に印刷処理を続けることができる。

【0014】

【発明の実施の形態】まず、本発明の前提となる仮想プリントサーバシステムについて説明する。

【0015】図1は、仮想サーバを適用するネットワークシステムのシステム構成図である。

【0016】図1において、クライアントコンピュータ（クライアントPC）は、n台接続されていることを仮定している。102、103、104はクライアントコンピュータであり、ネットワークケーブルによりネットワーク106に接続され、アプリケーションプログラム等の各種のプログラムを実行可能であり、印刷データをプリンタに対応するプリンタ言語に変換する機能を有するプリンタドライバを搭載している。なお、プリンタドライバは複数のプリンタ言語をサポートするものとする。101はサーバであり、ネットワークケーブルによってネットワーク106に接続され、ネットワークで使用するファイルを蓄積したり、ネットワーク106のしよう状態を監視したりする。本実施例のサーバ101は、更に、クライアントPC102、103、104から印刷要求が出された印字データのジョブ情報を格納したり、ネットワークプリンタ105のIP情報やバッファに受信したジョブの情報をクライアントPCに通知したりする機能を備えている。105はネットワークプリンタであり、ネットワークインタフェースを介してネットワーク106と接続されており、クライアントPCから送信される印字データを1ページずつドットイメージに変換して、1ページ毎に印刷する。106はネットワークであり、クライアントPC、サーバ、ネットワークプリンタ等と接続している。

【0017】このように、サーバ101、クライアントPC102、103、104、ネットワークプリンタ105により役割を分担することにより、クライアントPCの有効利用、ネットワークの負担の軽減をする処理を行う。

【0018】図2は、クライアントPC102の概略構成を示すブロック図である。なお、クライアントPC10

3、104も同じ構成である。

【0019】CPU200は、HD（ハードディスク）205に格納されているアプリケーションプログラム、プリンタドライバプログラム、OS等を実行し、RAM202にプログラムの実行に必要な情報、ファイル等を一時的に格納する制御を行う。

【0020】ROM201には、基本I/Oプログラム等のプログラム、文書処理の際に使用するフォントデータ、テンプレート用データ等の各種データを記憶する。202はRAMであり、CPU200の主メモリ、ワークエリア等として機能する。

【0021】203はFD（フロッピーディスク）ドライブであり、図5に示すようにFDドライブ203を通じてFD204に記憶された本印刷データ送信プログラムを含むネットワークプリンタ制御プログラム等を本コンピュータシステムにロードすることができる。204はFDであり、プリンタドライバプログラム等を格納しており、HD205などの記憶手段に格納しておくことができる。

【0022】FD203に記憶されている内容の構成を図4に示す。図4において、400はFD204のデータ内容であり、401はデータの情報を示すボリューム情報であり、402はディレクトリ情報、403はネットワークプリンタ制御プログラムは、図11、13、15に示される印刷データ送信プログラムを含むネットワークプリンタ制御プログラムのフォローチャートに基づいてプログラムコード化されたものである。404はその関連データである。

【0023】205はHDであり、アプリケーションプログラム、ネットワークプリンタ制御プログラム、OS等を格納している。206はキーボードであり、ユーザがクライアントコンピュータに対して、デバイスの制御コマンドの命令等を入力指示するものである。207はディスプレイであり、キーボード206から入力したコマンドや、プリンタの状態等を表示したりするものである。208はシステムバスであり、クライアントPC内のデータの流れを司るものである。

【0024】図3は、本印刷データ送信プログラムを含むネットワークプリンタ制御プログラムがRAM202にロードされ実行可能となった状態のメモリマップを表すものである。

【0025】301は基本I/Oプログラムであり、本制御装置の電源がONされたときに、HD205からOSがRAM202に読み込まれ、OSの動作を開始させるIPL（イニシャルプログラムローディング）機能等を有しているプログラムが入っている領域である。302はOSであり、303にはネットワークプリンタ制御プログラム、304には関連データがそれぞれ展開され、305にはCPU200がネットワークプリンタ制御プログラムを実行するワークエリアがとられている。

【0026】図6は、本実施例におけるネットワークプリンタ105の概略構成を示すブロック図である。本実施例では、ネットワークプリンタとして、レーザビームプリンタ(LBP)を使用しているが、これに限られるものではなく、他の方式のプリンタでもよいことはいまでもない。

【0027】601はCPUであり、装置全体を制御する。602はROM/RAMであり、CPU601を制御する制御プログラムや定数データ、送受信データを一時記憶するバッファを含んでいる。本発明の印刷中断プログラム(図12、14)もここに格納されている。

【0028】605は記憶部であり、例えば、ハードディスクのような、送受信するデータやCPU501で実行する制御プログラム、データを記憶する。603は表示部であり、ROM/RAM602に一時記憶されているデータや、記憶部605に記憶されているデータの内容、および操作状況などを表示する。

【0029】604はプリンタ印字部であり、ROM/RAM602に記憶されているプログラムに基づいてCPU601で生成したビットマップデータを印字出力する。606はネットワークボードであり、この通信部を介してクライアントコンピュータ(クライアントPC)やサーバ等の外部装置と印字データやジョブ情報等のデータ情報の通信を行う。更に、ネットワークボード606は、図示省略したRAM、CPU、ROMを有しており、インテリジェンス性を持っている。本発明の印刷中断プログラムは、このネットワークボード606のROMに記憶されているものとする。

【0030】本実施例では、本発明の印刷中断プログラムをネットワークボード内に格納されている例を示したが、これに限るものではなく、ネットワークプリンタ105内のROM602に格納しておいても本印刷中断方法は実現可能であり、FDやCD-ROM等の外部記憶手段を介してネットワークプリンタ105に実装してもよいことはいまでもない。

【0031】607は通信回線であり、ネットワークボード606とネットワークをつなぐものである。

【0032】また、図示省略したがネットワークプリンタ105には、ユーザが直接指示をするための指示入力手段である操作部(コントロールパネル)も有しているものとする。

【0033】図7は、本発明のシステムにおけるクライアントPCおよびサーバのソフトモジュール構成を表した図である。

【0034】701はネットワークプリンタ、702はクライアントPCのソフトモジュール構成、703はサーバのソフトモジュール構成である。704はネットワークプリントシステムに印刷指示を出すアプリケーションモジュールであり、705はWindowsのGDI、706はWindows内に組み込まれるプリンタドライバ、707

はWindows内のプリンタスプーラ、708は仮想プリンタ用プリンタモニタ、709はネットワークプリンタ用制御モニタ、710は仮想プリントマネージャ、711は仮想プリントサーバAPI(Application interface)、712は仮想プリンタサーバサービスである。

【0035】仮想プリントマネージャ710、仮想プリントサーバAPI711、仮想プリントサーバサービス712は、クライアントPCとサーバの両方に存在する。以後、仮想プリントサーバサービス712を構成している仮想プリントサーバサービス(クライアント)と仮想プリントサーバサービス(サーバ)を合わせたものを仮想プリントサーバと呼び、このシステムを仮想プリントサーバシステムと呼ぶ。

【0036】前記構成においてクライアントPC102からネットワークプリンタ105に印刷を行う動作を説明する。本実施例においては、Windowsを例にとりて説明を行う。クライアントPCからサーバへ印刷要求をする印刷処理の流れを図8に表し、サーバからクライアントPCへ印字可能許可を与えてプリンタに送信する印刷処理の流れを図9で表す。ここで、すでに説明したブロック図は、同じ符号を用いて説明を続けることにする。この図8および図9を用いて印刷処理の流れを説明する。

【0037】クライアントPC702(102)上で、アプリケーション704はGDI705を通して印刷を開始する。GDIはWindowsスプーラ707及び仮想プリンタサーバ用プリントモニタ708に印刷の開始を通知する。印刷の開始を受け取った仮想プリンタサーバ用プリントモニタ708は仮想プリントサーバサービス(クライアント)712を経由して、サーバ703(101)上にある仮想プリントサーバサービス(サーバ)712に、これより印刷データの保存を開始を依頼する。GDI705はプリンタドライバ706に印刷データをプリンタ言語に変換することを要求する。プリンタ言語に変換されたプリントデータはWindowsスプーラ707にスプールされる。一方、仮想プリンタサーバ用プリントモニタ708は、Windowsスプーラ707にスプールされたプリントデータをWindowsスプーラ707より受け取り、そのプリントデータを仮想プリントサーバサービス(クライアント)712に渡す。仮想プリントサーバサービス(クライアント)712は受け取ったプリントデータを図2のHD205内の仮想プリントスプーラ801にある図示省略したテンポラリファイルに一時保存する。すべてのプリントデータをHD205内の仮想プリントスプーラ801内のテンポラリファイルに保存した時点で、仮想プリントサーバサービス(クライアント)712は、サーバ703(101)上にある仮想プリントサーバサービス(サーバ)712にプリントデータの保存終了を通知し、印刷を依頼する。ここで、仮想プリントサーバサービスは、クライアントPCとサーバとで同じモジュールを使用していて、設定でクライアント

用、サーバ用と使い分ける事のできるものである。

【0038】図9では、先に仮想プリントサーバサービスに登録された印刷ジョブが、サーバの管理を経て印刷を行う順番になり、実際にネットワークプリンタにプリントデータを送信するまでの動作を示した図である。仮想プリントサーバサービス（サーバ）712は、印刷の順番になったクライアントPCに印刷可能の指示を出す。その指示を受け取った仮想プリントサーバサービス（クライアント）712は、前述で一時的に仮想プリントスプーラ801に保存したプリントデータを読みだし、ネットワークプリンタ用制御モニタ709に渡す。ネットワークプリンタ用制御モニタ709は、印刷通信プロトコルを通して、ネットワークプリンタ701にプリントデータを渡し、ネットワークプリンタ701で印刷をおこなう。

【0039】ネットワークプリンタ701のステータスをクライアントPCに通知する動作を説明する。ここではWindowsを例にとって説明をする。プリンタステータス流れを図10に示す。

【0040】仮想プリントサーバサービス（サーバ）712は、本実施例においては、5秒間隔（デフォルト）でSNMPマネージャ1002にネットワークプリンタ701のステータスの収集を依頼する。SNMPマネージャ1002は、ステータス集収要求をネットワークプリンタ701に依頼する。ネットワークプリンタ701は、現在のプリンタステータスを返す。仮想プリントサーバサービス（サーバ）712は、ネットワークプリンタ701のステータスが変化した場合、このネットワークプリンタ701を使用しているクライアントPCに対してステータスの変更通知を行う。サーバから出されたプリンタステータスの変更通知はクライアントPC内の仮想プリントサーバサービス（クライアント）712が受けとり、クライアントPC内のRAMにあるレジストリ1001にプリンタステータスを保存する。アプリケーション704は、仮想プリンタサーバAPI711を経由してレジストリ1001に保存されているプリンタステータスを取得することができる。

【0041】このようにして、仮想プリントサーバシステムは印刷の処理を行う。

【0042】本実施例はWindowsNT（登録商標）を用いた場合であり、この中でプリントモニタ708、仮想プリントスプーラ、仮想プリントサーバサービス（クライアント/サーバ）712、ネットワークプリンタ制御モニタ709は本発明で新たに作られたものであり、それ以外はWindowsNT標準のモジュールである。しかし、これに限られるものではなく、OS/2等の他のOSでも構築可能である。

【0043】〔第1の実施例〕第1の実施例では、送信側であるクライアントコンピュータの処理で、印刷中断処理の対処を行う例について示したものである。

【0044】第11図は、クライアントコンピュータ（以下コンピュータ）上で動作する印刷データ送信プログラムのコンピュータの制御を表すフローチャートである。この印刷データ送信プログラムは、本発明のネットワークプリンタ制御プログラムの一部であり、ROM201、RAM202、HD205のいずれかに格納されている。

【0045】まず、ユーザから印刷処理開始の指示を受けると本印刷データ送信プログラムが立ち上がり、ステップS1101に進む。ステップS1101では、ネットワークプリンタとクライアントコンピュータとのコネクションを確立する。ステップS1102では、ユーザから印刷中断要求があったかどうかを判断する。印刷中断要求があればステップS1105へ進み、印刷中断要求がなければステップS1103進む。

【0046】ステップS1103ではネットワークプリンタへ印刷データを送信する。ステップS1104では、印刷データをすべて送信したかどうかを判断する。すべて送信したのならばステップS1106へ処理を進める。印刷データの終わりまで送信していないのであれば、ステップS1102へ戻る。S1106では、ネットワークプリンタへコネクションの切断コマンドを送り、コネクションを切断して処理を終了する。

【0047】ステップS1105では、ユーザから印刷中断の旨の指示を受けたので、本印刷データ送信プログラムは、ネットワークプリンタへ印刷中断コマンドを送信し、ステップS1106へ処理を進める。

【0048】第12図は、ネットワークプリンタ上で動作する印刷中断プログラムにおけるネットワークプリンタの制御を表したフローチャートである。この印刷中断プログラムは、前述したようにネットワークボード606の中の図示省略した記憶媒体に格納されている。

【0049】ステップS1201では、印刷中断プログラムは、クライアントコンピュータとのコネクションが確立したかどうかを判断する。コネクションが確立するまでステップS1201を繰り返す。コネクションが確立されると判断されると処理は、ステップS1202へ進む。ステップS1202では、クライアントコンピュータとのコネクションが切断されたかどうかを判断する。この判断は、コンピュータからコネクション切断コマンドがネットワークプリンタへ送信されてくることによりネットワークボード上のCPUが判断する。コネクションが切断された場合は、印刷を開始し、コネクション切断コマンドが送信されてこなければ、ステップS1203へ進む。ここでコネクション切断コマンドの送信により印刷開始の判断をしたが、これ以外にもクライアントコンピュータから印刷ジョブのジョブ終了コマンドが受信されたかを判断することによりジョブの送信終了を判断してもよい。

【0050】ステップS1203では、クライアントコンピュータから印刷データを受信する。ステップS1204で

は、ネットワークプリンタが受信した印刷データが印刷中断コマンドかどうか判断する。この判断は、ネットワークボード606のCPUが印刷データを解析することにより判断するものである。ネットワークボード606が解析した印刷データの中に印刷中断コマンドでなければ、ステップS1202へ処理を戻す。もし印刷データの中に印刷中断コマンドを含んでいれば、ステップS1205へ進む。

【0051】ステップS1205では、印刷中断コマンドを判断したネットワークボード606が、ネットワークボード内にある受信データとネットワークプリンタ内にある印刷データを保持しているバッファをクリアし処理を終了する。このバッファのクリアは、次に送られてくるデータを正常に印刷できるように、バッファ内のすべてのデータを削除するものである。ネットワークプリンタ内にある印刷データ（プリントデータ）は、ネットワークプリンタに対し削除コマンドをネットワークボードが送信することにより、ネットワークプリンタが印刷データを削除するよう制御させている。

【0052】このように、第1実施例では、コンピュータがネットワークプリンタへ印刷データを送信中に印刷中断コマンドを受信した場合に、印刷中断コマンドをネットワークプリンタへ送信することにより、ネットワークプリンタに接続されているネットワークボードが印刷の中断を判断でき、ネットワークボードとネットワークプリンタ内の両方のバッファをクリアするので、無駄な出力を割くことができ、次に送られてくる印字データも文字化けなどの影響を受けずにすむ。

【0053】〔第2の実施例〕第2の実施例では、受信側であるネットワークボード606の処理で、中断処理の対処を行う例について示したものである。

【0054】第13図は、クライアントコンピュータ上で動作する印刷データ送信プログラムのコンピュータの制御を表すフローチャートである。この印刷データ送信プログラムは、本発明のネットワークプリンタ制御プログラムの一部であり、ROM201、RAM202、HD205のいずれかに格納されている。

【0055】ステップS1301では、該プログラムはクライアントコンピュータとネットワークプリンタとのコネクションを確立するよう制御する。ステップS1302では、該プログラムは、クライアントコンピュータからネットワークプリンタに、これから送信する印刷データのデータサイズを先に送信するよう制御する。

【0056】ステップS1303では、該プログラムは、ユーザから印刷中断要求の指示があったかどうかを判断する。印刷中断要求があればステップS1306に処理を進め、該プログラムはクライアントコンピュータからネットワークプリンタへコネクション切断コマンドを送信して、コネクションを切断するよう制御し、処理を終了する。ステップS1303で、ユーザからの印刷中断要求がな

ければ、ステップS1304に処理を進める。

【0057】ステップS1304では、クライアントコンピュータがネットワークプリンタへ印刷データを送信する。ステップS1305では、クライアントコンピュータが印刷データをネットワークプリンタへすべて送信したかどうかを判断する。すべての印刷データを送信したと判断された場合は、ステップS1306へ処理を進め、ネットワークプリンタへコネクション切断コマンドを送信し、コネクションを切断して処理を終了する。すべての印刷データをネットワークプリンタへ送信していない場合は、ステップS1303へ処理を戻す。

【0058】第14図は、ネットワークプリンタ上で動作する印刷中断プログラムのネットワークプリンタの制御を表すフローチャートである。この印刷中断プログラムは、前述したようにネットワークボード606の中にある図示省略したROM等の記憶媒体に格納されている。

【0059】ステップS1401では、該プログラムは、ネットワークプリンタとコンピュータとのコネクションが確立したかどうかを判断する。このコネクションが確立するまでステップS1401を繰り返す。コネクションが確立されると、処理はステップS1402へ進み、ネットワークプリンタはコンピュータから受信する印刷データのデータサイズを受信する。ステップS1403では、コネクションが切断されたかどうかを判断する。この判断は、コンピュータからネットワークプリンタにコネクション切断コマンドが送信されてきたかにより判断する。コネクションが切断されていれば、処理をステップS1406に進め、実施例1で説明したように印刷中断プログラムは、ネットワークボード内の受信データと、ネットワークプリンタ内の印刷データを保持しているバッファの中のデータをすべてクリアし処理を終了する。コネクションが切断されていない場合は、ステップS1404へ進む。

【0060】ステップS1404では、ネットワークプリンタはコンピュータから印刷データを受信し、ステップS1405へ処理を進める。ステップS1405では、ネットワークプリンタが始めに受信した印刷データサイズと、実際にコンピュータから受信したデータのサイズを計っておき、その合計サイズとを比較する。すべての印刷データを受け取ったと判断された場合には、印刷処理を開始する。実際にクライアントコンピュータから受信したデータの合計サイズが、始めに受信した印刷データサイズよりも小さい場合は、ステップS1403へ戻る。

【0061】このように、第2実施例では、クライアントコンピュータがネットワークプリンタへ印刷データの始めに印刷データサイズを送信するので、印刷データを送信中にコンピュータがユーザから印刷中断コマンドを受信した場合に、コネクションを切断することにより、ネットワークプリンタに接続されているネットワークボードが印刷データがすべて送信されてくる前に受信が終わりコネクションが切断されてしまった場合でも、ネッ

トワークプリンタ側で印刷の中断を判断でき、ネットワークボード内の印字データとネットワークプリンタ内の受信バッファをクリアするので、無駄な出力を割くことができ、次に送られてくる印字データも文字化けなどの影響を受けずにすむ。

【0062】〔第3の実施例〕第15図は、クライアントコンピュータ上で動作する印刷データ送信プログラムのフローチャートである。この印刷データ送信プログラムは、本発明のネットワークプリンタ制御プログラムの一部である。このプログラムは、前述したようにネットワークボード606内の図示省略された記憶媒体に格納されている。

【0063】ステップS1501では、該プログラムはCPU200を用いて、ハードディスクに格納されているプリンタドライバによりページ記述言語に変換された印刷データ（プリントデータ）を一時的に保存するためのファイルを作成する。

【0064】ステップS1502では、該プログラムは新しいファイルを作成し、ページ記述言語に変換された印刷データを一度該ファイルへすべて書き込む。ステップS1503では、該プログラムはクライアントコンピュータからネットワークプリンタに対してコネクションを確立するよう制御する。実際は、クライアントコンピュータがコネクション要求パケットをネットワークプリンタへ送り、ネットワークプリンタから応答パケットを得ることで確立できる。

【0065】ステップS1504では、該プログラムは、CPU200にユーザから印刷中断要求があったかどうかを判断するよう制御させる。このとき、印刷中断要求があれば、ステップS1510へ進み、印刷中断要求がなければステップS1505に進む。

【0066】ステップS1505では、該プログラムは、ファイルから印刷データを読み出し、ステップS1506でネットワークプリンタへ印刷データを送信する。ステップS1507では、該プログラムは、ファイルの印刷データをすべて送信したかどうかを判断し、すべて送信したのならばステップS1508へ進み、まだ送信していない印字データが残っていれば、ステップS1504へ戻る。

【0067】ステップS1510でもファイルから印刷データを読み出し、ステップS1511でネットワークプリンタへ印刷データを送信するが、ステップS1512では、該プログラムはCPU200を用いて印刷データを解析して、現在送信中のページの終わりまで印刷データを送信したかどうかを判断する。印字データの中にフォームフィードコマンドなどがあれば、そこまでが1ページだと判断できる。ページの終わりまで印刷データを送信したならば最後にジョブ終了コマンドを印刷データの最後のページに付加させてネットワークプリンタに送信し、ステップS1508へ進み、そうでなければ、ステップS1510へ戻る。

【0068】ステップS1508ではネットワークプリンタとのコネクションを切断する。コネクションの切断は、コンピュータがネットワークプリンタへ切断要求パケットを送信し、ネットワークプリンタから応答パケットが送信されてきたら、コネクションが切断されたと判断できる。ステップS1509で、CPU200はS1501で作成したファイルを削除して処理を終了する。

【0069】ネットワークプリンタ側では、通常処理を行う。コネクションが削除された時点で受信を終えるのであるが、本実施例では、ちょうどページ分のデータが受信バッファにあるので、フォームフィードコマンドもしくはジョブ終了コマンドにより、そのページまで出力するので、受信バッファにデータがなくなり、次に送られてきたジョブは文字化けせずに出力可能となる。

【0070】このように、第3実施例では、コンピュータがあらかじめ印字データをファイルに落としておくことにより、送信中にユーザから印刷中断命令が行われても、ページの終わりまで印字データを送信することができるので、ネットワークプリンタは、受信したページまで出力するので、次に来たジョブが文字化けをしないので済むようになる。

【0071】〔第4の実施例〕第4の実施例では、第2の実施例で説明したネットワークボード606の処理において、更に印刷時のタイムアウトを考慮した制御を説明する。

【0072】図14において、ステップS1403～ステップS1405のループ時にカウンタをまわしておき、ある一定時間が経っても印刷データの終わりまで受信できない場合に、該印刷中断プログラムは、クライアントコンピュータからのデータ送信中に何らかの問題が生じたことを認識し、ネットワークプリンタからコネクションを切断し、ステップS1406に処理を進め、ネットワークボードとネットワークプリンタ内の受信データを削除する。

【0073】ここでカウンタを始めるのは、印刷データを受信したときである。つまり、印刷データを受信するとカウンタはゼロになり、カウンタが例えば1000になるとタイムアウト処理が起こるようにする。もし途中で印刷データの受信が開始されれば、カウンタは再びゼロに戻るよう制御されている。

【0074】更に、本発明の第4実施例では、第2実施例における印刷システム上に本タイムアウト処理を実現させたが、例えば、第1実施例においても実現可能である。

【0075】このようにタイムアウト制御することにより、印刷データ送信側のコンピュータに異常が生じて、コネクションが接続されたまま長時間印刷データが送信されない場合でも、ある一定時間印刷データが送信されないとネットワークプリンタ側から強制的にコネクションを切断し、受信データを削除するよう制御したので、次に送られてくる印刷データを正常に印刷可能になっ

た。

#### 【0076】

【発明の効果】以上説明したように、第1実施例に示唆されている発明によれば、ネットワークプリンタが印刷データの送信中止をコマンドによって知ることができ、ページの途中までしか送信されなかった印刷データを、ネットワークプリンタのバッファから消去することができる。その結果、ネットワークプリンタは、コンピュータからの印刷データの送信が中止された後、別の新しい印刷データ送信されても、正常に印刷処理を続けることができる。

【0077】第2実施例に示唆されている発明によれば、ネットワークプリンタが印刷データの送信中止をコネクションの切断によって知ることができ、コンピュータから送信されてきた印字データのサイズと見比べることにより、送信された印字データが正常なものか判断することができ、ページの途中までしか送信されなかった印刷データをネットワークプリンタのバッファから消去することができる。その結果、ネットワークプリンタは、コンピュータからの印刷データの送信が中止された後、別の新しい印刷データ送信されても、正常に印刷処理を続けることができる。

【0078】第3実施例に示唆されている発明によれば、あらかじめ印字データをファイルに落としておくため、印字データの送信中にユーザから印刷中断要求があっても、コンピュータはページの終わりまで印刷データをプリンタに送信してから印刷データの送信を中止することができる。その結果、プリンタはコンピュータからの印刷データの送信が中止された後、別の新しい印刷データ送信されても、正常に印刷処理を続けることができる。

【0079】第4実施例に示唆されている発明によれば、クライアントコンピュータからネットワークプリンタに長時間印刷データが送信されてこない場合には、ネットワークプリンタ側から強制的にコネクションを切断し、受信データを削除するので、コネクションが接続されたままで印刷データの送信異常が生じた場合でも、復旧が可能になり、次に送られてくる印刷データも正常に印刷可能になる。

#### 【図面の簡単な説明】

【図1】本実施の仮想サーバを適用するネットワークシステムのシステム構成図である。

【図2】図1におけるクライアントコンピュータの概略構成を示すブロック図である。

【図3】図2におけるRAMに、図4に示すFDからプログラムを展開したときのメモリマップを示す図である。

【図4】図2におけるFD内部のデータを表すメモリマップを示す図である。

【図5】図1におけるクライアントコンピュータと図2

におけるFDとの関係を表した図である。

【図6】図1におけるネットワークプリンタの概略構成を示すブロック図である。

【図7】本実施の形態に係るクライアントコンピュータおよびサーバのソフトモジュール構成を表す図である。

【図8】仮想サーバを用いた印刷機能に関するプリントモニタの処理の流れを表したフローチャートである。

【図9】仮想サーバを用いた印刷機能に関するプリントモニタの制御の流れを表したフローチャートである。

【図10】図1におけるクライアントからサーバへ印刷要求する際の印刷処理の流れを表す図である。

【図11】本発明の第1の実施例の印刷中断方式を示すコンピュータの動作のフローチャートである。

【図12】本発明の第1の実施例の印刷中断方式を示すネットワークプリンタの動作のフローチャートである。

【図13】本発明の第2の実施例の印刷中断方式を示すコンピュータの動作のフローチャートである。

【図14】本発明の第2の実施例の印刷中断方式を示すネットワークプリンタの動作のフローチャートである。

【図15】本発明の第3の実施例の印刷中断方式を示すネットワークプリンタの動作のフローチャートである。

#### 【符号の説明】

101	サーバ
102～104	クライアントコンピュータ（クライアントPC）
105	ネットワークプリンタ
106	ネットワーク
200	CPU
201	ROM
202	RAM
203	FDドライブ
204	FD（フロッピーディスク）
205	HD（ハードディスク）
206	キーボード
207	ディスプレイ
208	システムバス
300	RAMのメモリマップ
301	基本I/Oプログラム
302	OS
303	ネットワークプリンタ制御プログラム
304	関連データ
305	ワークエリア
400	FDのメモリマップ
401	ボリューム情報
402	ディレクトリ情報
403	ネットワークプリンタ制御プログラム
404	関連データ
601	CPU
602	ROM/RAM
603	記憶部



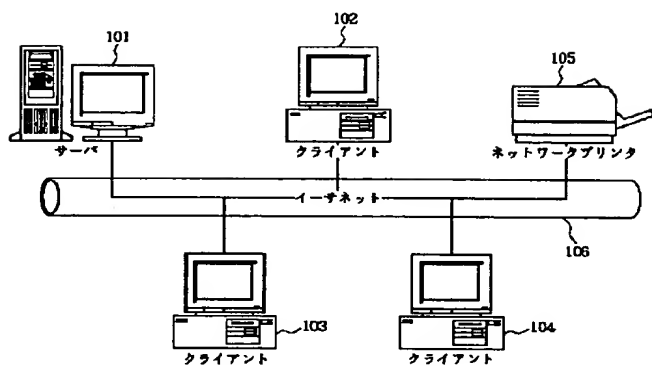
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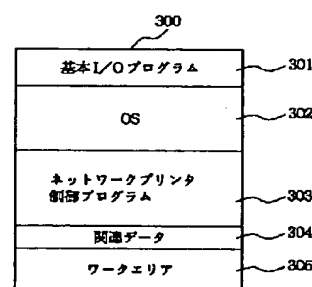
604 表示部  
 605 プリンタ印字部  
 606 通信部  
 607 通信回線  
 701 ネットワークプリンタ  
 702 クライアント (クライアントPC)  
 703 サーバ  
 704 アプリケーション  
 705 GDI  
 706 プリンタドライバ

707 Windowsスプーラ  
 708 仮想プリントサーバ用プリンタモニタ  
 709 ネットワークプリンタ用制御モニタ  
 710 仮想プリントマネージャ  
 711 仮想プリントサーバAPI  
 712 仮想プリントサーバ (仮想プリントサーバサービス)  
 801 仮想プリントスプーラ  
 1001 レジストリ  
 1002 SNMPマネージャ

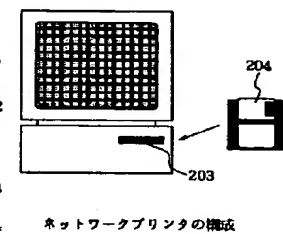
【図1】



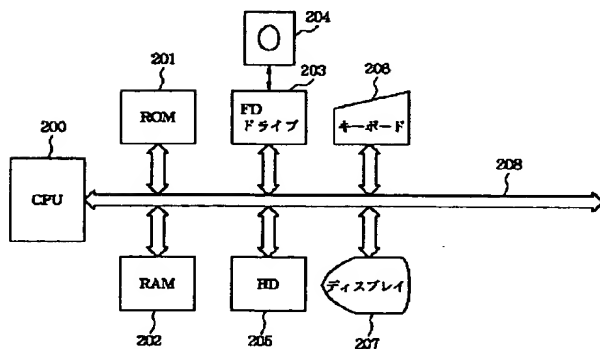
【図3】



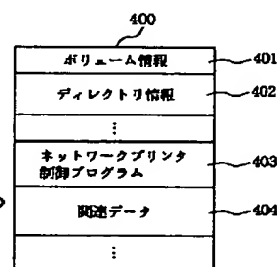
【図5】



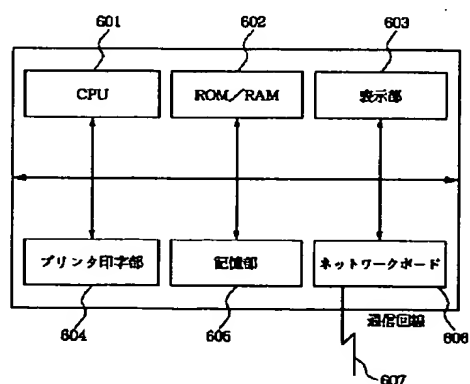
【図2】



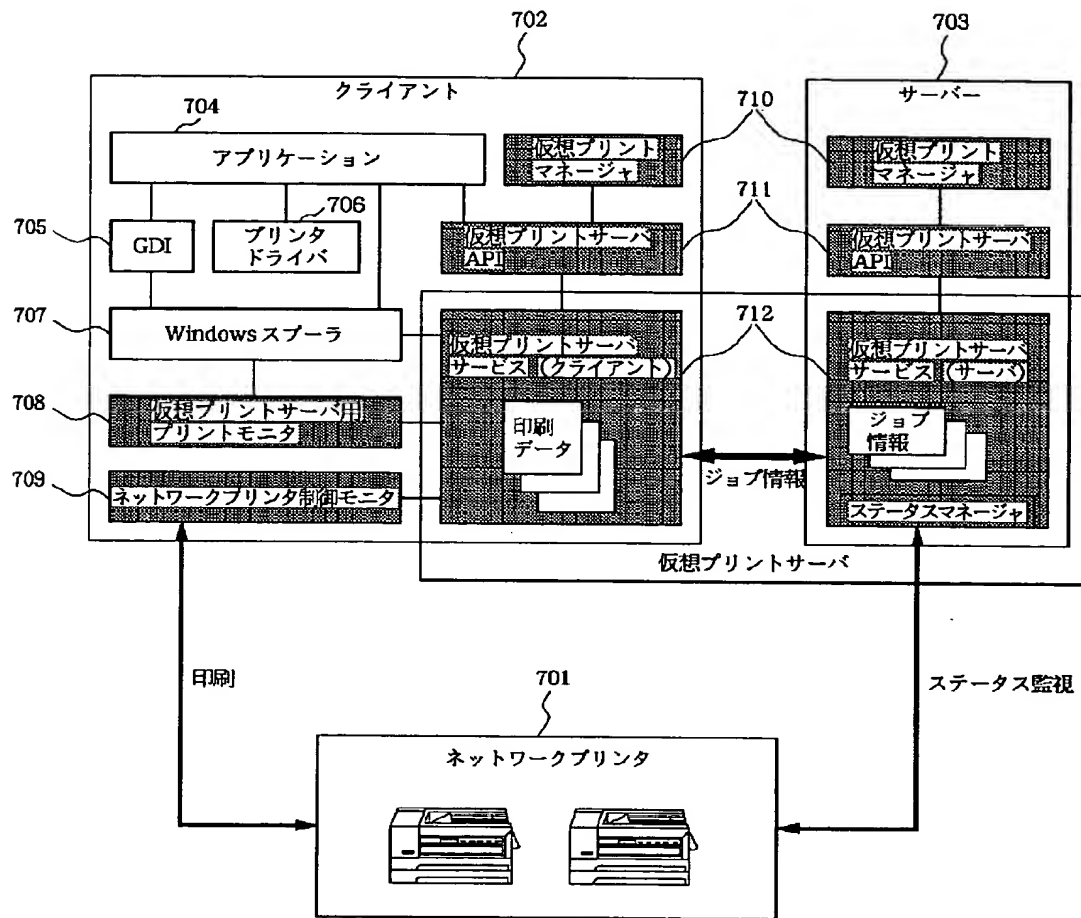
【図4】



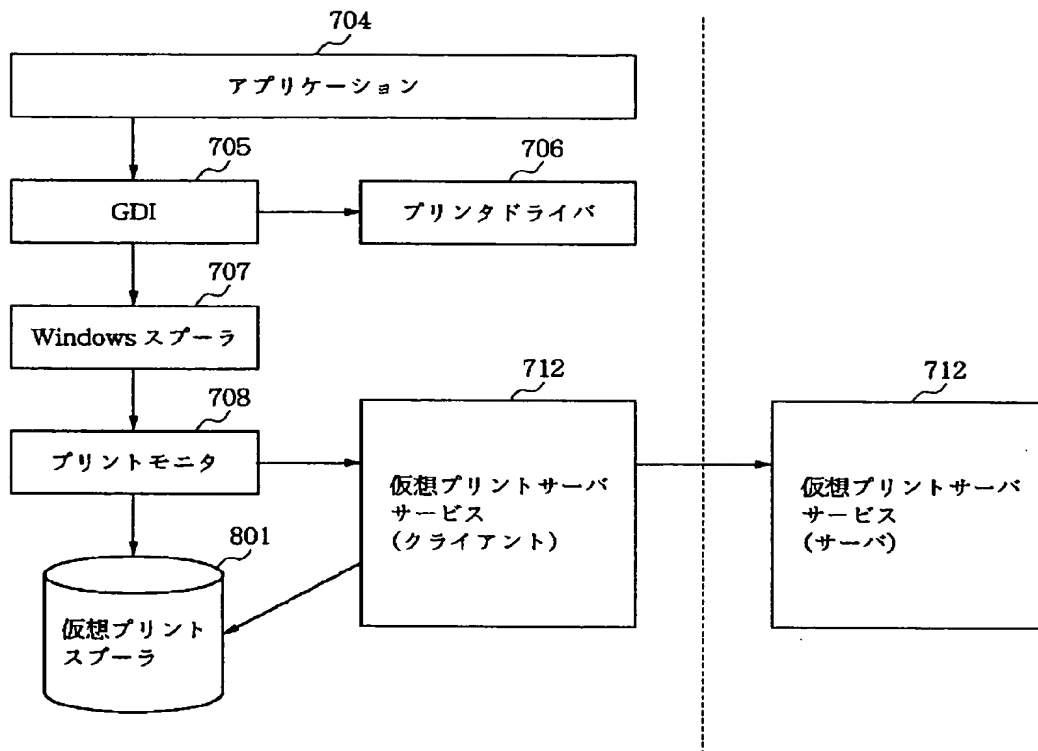
【図6】



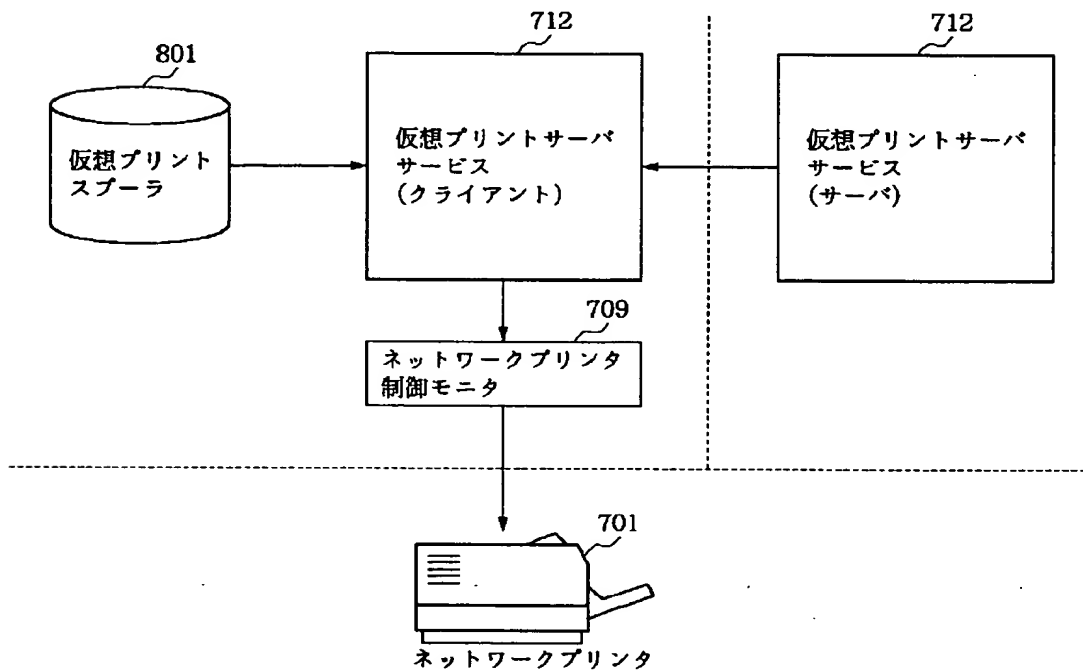
【図7】



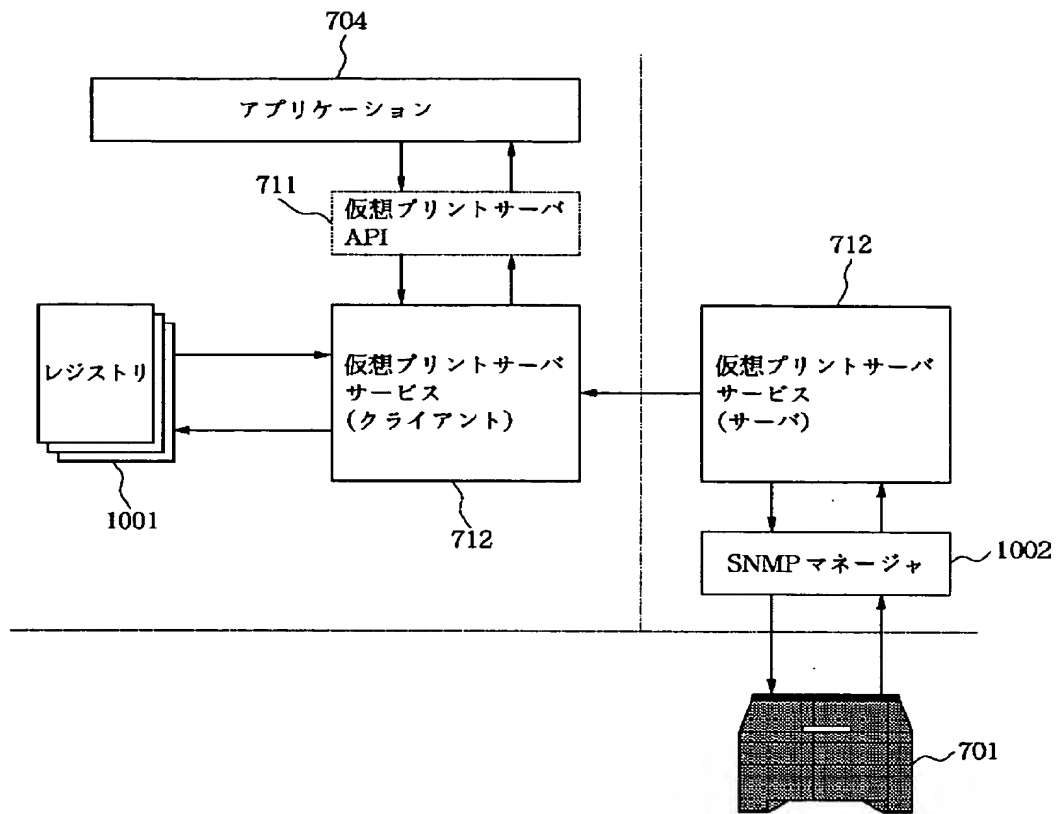
【図8】



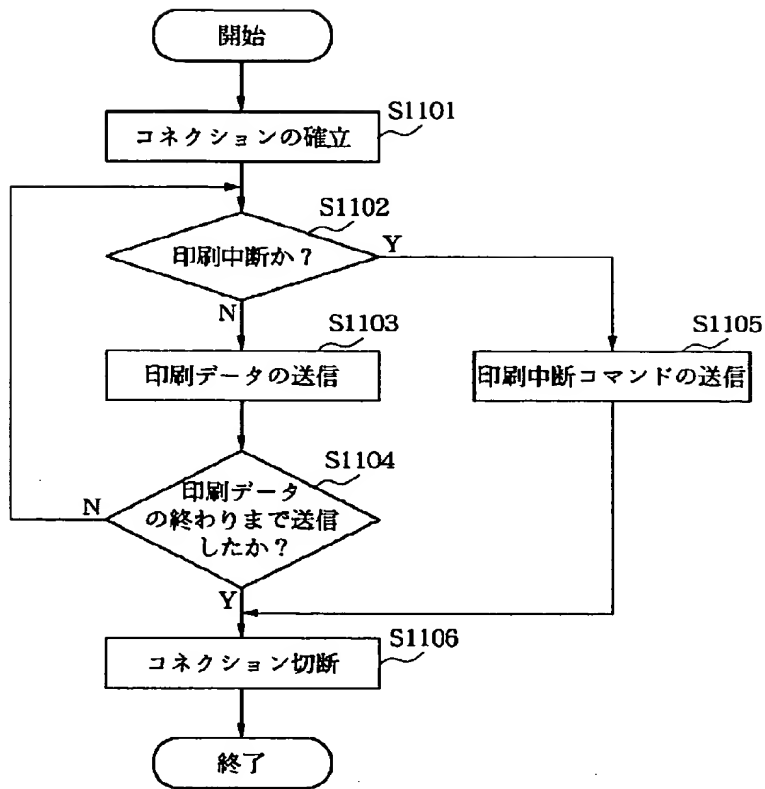
【図9】



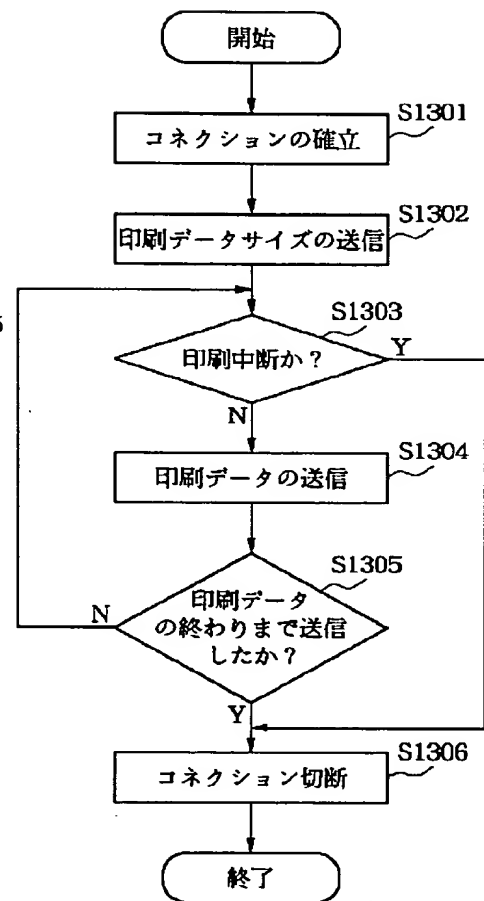
【図 10】



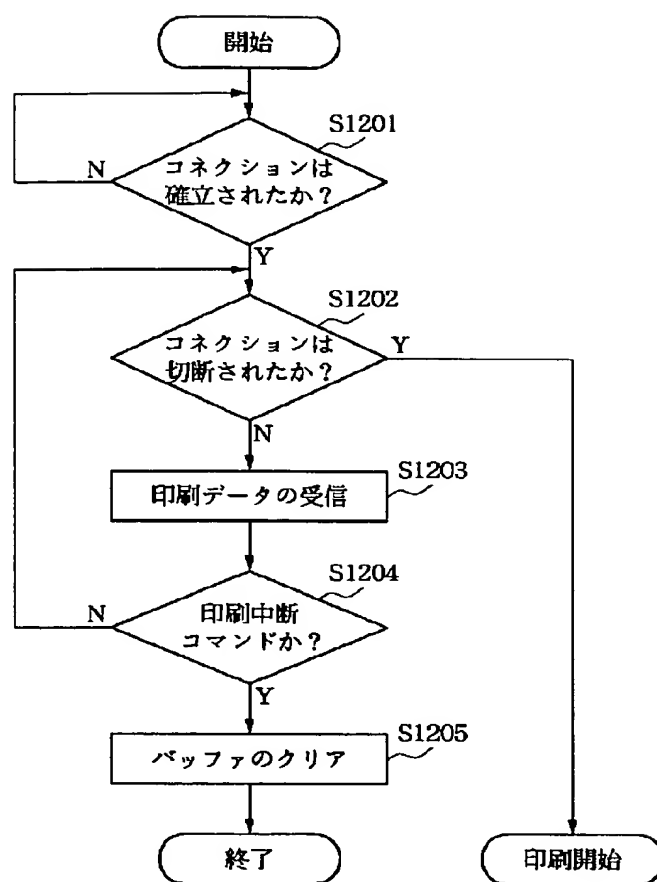
【図11】



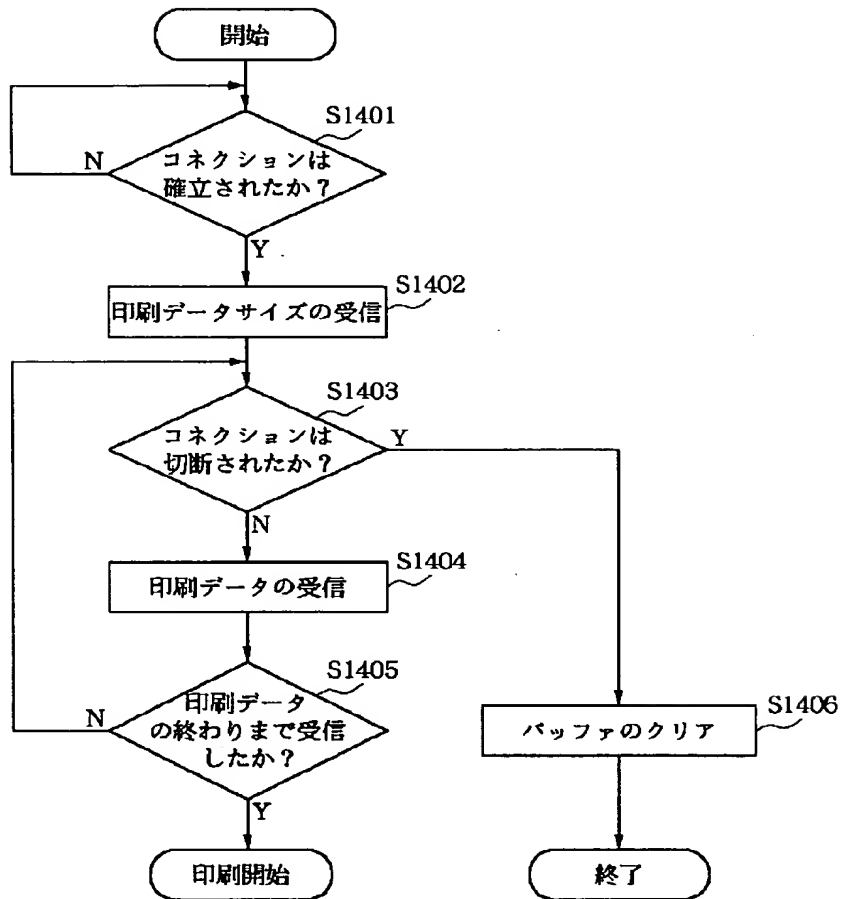
【図13】



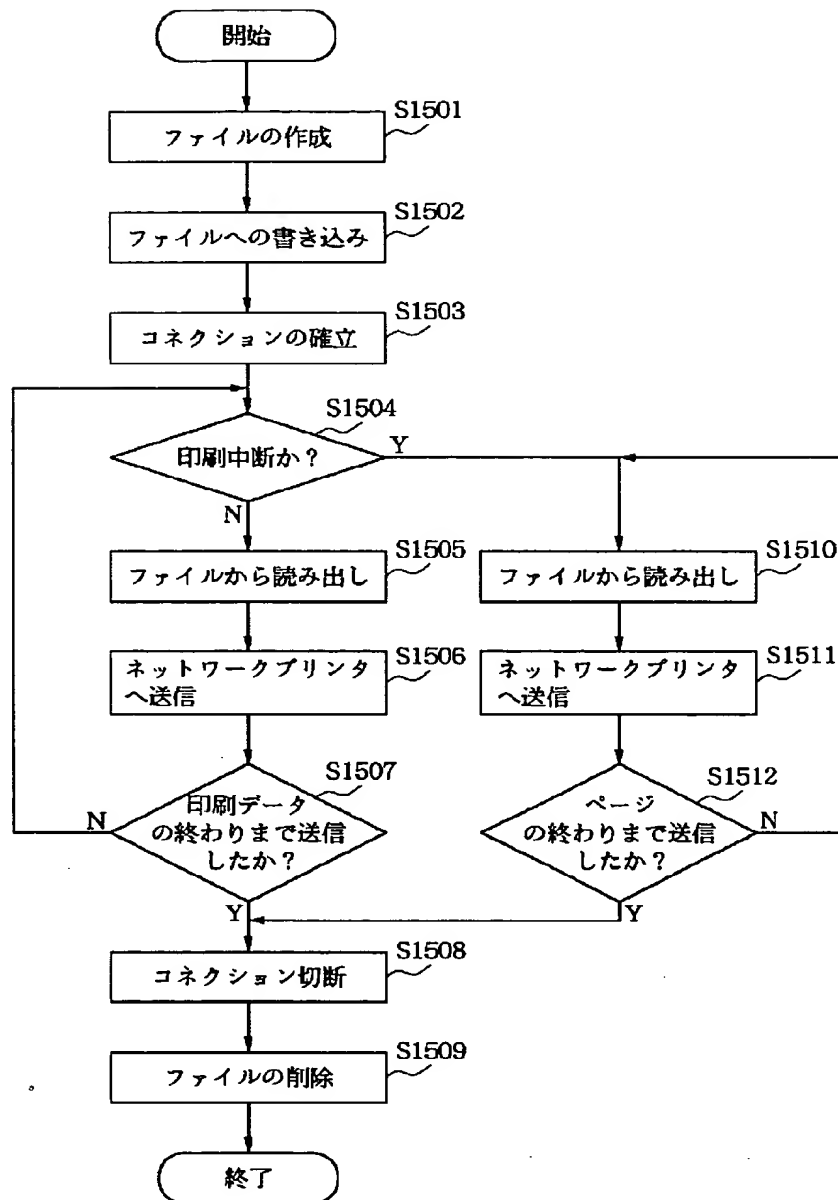
【図 12】



【図14】



【図 15】



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